ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 115 No. 1 March 1995

FORTHCOMING MEETINGS

Tuesday, 25 April 1995. Mr D. A. Turner who is well known to visitors to East Africa, will be visiting Britain and will speak on **"Ornithology in East Africa, looking back over the last thirty years and into the 21st century".**

Those wishing to attend are asked to notify the Hon. Treasurer by Tuesday, 11 April 1995.*

Tuesday, 23 May 1995. ANNUAL GENERAL MEETING at 6 p.m. Followed by the evening meeting at which **Dr David Thomas** of the University of Wales returns to speak, on this occasion on **"Cool birds in hot deserts".** The subject of the talk is the sandgrouse—members will already know of the remarkable work done by Dr Thomas in this field.

Those wishing to attend the evening meeting are asked to notify Miss H. Baker by Tuesday, 9 May 1995.*

Tuesday, 20 June 1995. Dr Carlo Violani of Milan and of Pavia University will speak on **"Tommaso Salvadori and his ornithological world".** Dr Violani will speak on one of Italy's best known ornithologists, Count Ardelado Tommaso Salvadori Paleotti (1835–1923).

Those wishing to attend are asked to notify the Hon. Treasurer by Tuesday, 6 June 1995.*

Tuesday, 18 July 1995. Mr David Fisher will speak on **"Birds of Mongolia".**

**Late acceptances and cancellations can usually be taken up to the Thursday preceding a meeting.*

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London at 6.15 p.m. for 7 p.m. A map showing Imperial College will be sent to members on request.

Overseas Members visiting Britain are particularly welcome at meetings. Details can be obtained from the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB. Telephone (01572) 722788.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 115 No. 1 Published 24 March 1995

REPORT OF THE COMMITTEE FOR 1994

Meetings. Eleven meetings were held during 1994. Ten evening meetings were held at Imperial College and a second Club visit was made on 22 April to the Sub-department of Ornithology at The Natural History Museum at Tring.

A total of 429 attended these meetings, 276 members and 153 guests, which is above the average attendance of recent years despite the steady increase in the charges for meetings made by Imperial College since 1991.

The 1994 programme included a presentation by Mr John Burton of early films of ornithological interest retrieved from the National Film Archive; and speakers during the year included Dr Storrs Olson, Mr Martin Woodcock, Dr Peter Lack, Mr Richard ffrench and Mr John Wyatt. An extra meeting was arranged in August when Professor Jacques Vielliard, of São Paulo, spoke. Mr Tom Gullick introduced Rafael Heredia who spoke on the Lammergeier in the Pyrenees at a well attended meeting in October in the Rector's House. We are most grateful to Mr Gullick for arranging Senõr Heredia's visit to London.

Committee. The Committee met 7 times in 1994 and the attendance was 78%. The first of the series of Occasional Publications, *Extinct and Endangered Birds in the collections of The Natural History Museum* by Alan Knox and Michael Walters, was seen through the press by Dr J. F. Monk and was published in May. The Committee are now actively considering publication of a second title of the series.

Mr Peal has continued the work of completing the stock of back-numbers of the *Bulletin* for all years. The Committee is most grateful to Mrs F. E. Warr who looks after the stock of back-numbers of the *Bulletin*, dealing with their despatch and with that of separates for authors.

During the 102 years of its existence the Club has accumulated considerable amounts of archive material. Arrangements are presently being made for these to be collected in one place and collated. The Committee is indebted to Mr N. H. F. Stone who is undertaking the work of collating and cataloguing the material before it is placed on permanent loan in the Library of The Natural History Museum through the kind offices of Mr I. R. Bishop.

A Club badge, a sterling silver brooch in the form of an *Ibis*, has been produced by Messers Gittings for sale by the Club.

Membership. Paid-up membership increased during the year from 574 to 583 at 31 December 1994. 354 members have addresses within the U.K. and 229 overseas. There were 35 new members in 1994, 9 members resigned and 31 failed to pay their subscriptions, and 14 members who were in arrears in 1993 and 1994 became fully paid-up members. Each new member elected to the Union in 1994 was sent the new recruitment leaflet and an invitation to become a member of the Club.

Bulletin Sales. Non-member Subscribers were 138, 20 in the U.K. and 118 overseas. Although there was a welcome increase overall and an increase of 12 in the number of Overseas Subscribers, the reduction of Subscribers within the U.K. may reflect the continued reduced funding for books and journals for institutions here.

Bulletin. Volume 114 consisted of 280 pages, and contained 39 main papers and 11 shorter (In Brief) contributions. There was one colour plate. Papers included descriptions of 9 new subspecies (7 Afrotropical, 1 Central American, 1 Pacific Ocean), also field descriptions of 6 probably new taxa from a very little known part of New Guinea. New distributional data were published for Siberia, Liberia, New Guinea, Mexico and three South American countries. Among papers of special interest may be mentioned the first ornithological survey of the Fakfak Mountains of Irian Jaya, evidence for a major southward extension of the range of Garden Warblers wintering in South Africa, the discovery of the nest and egg of Loria's Bird of Paradise, the first detailed field observations of the endemic Javan Scops Owl, and a critical review of American migration routes of the Arctic Tern, correcting previous errors and providing evidence for a hitherto unknown migration route through or along the coast of western Mexico. There was the usual variety of papers dealing with points of distribution and taxonomy. The 63 authors were from 21 countries and 5 continents.

Finance. Investment income accrued as budgeted for, allowing operating expenditure to be generally matched by total income, having regard amongst others to the relatively modest level of current subscription rates.

The Herbert Stevens Fund yielded net income and associated Inland Revenue tax recovered as planned although the underlying portfolio value did not change significantly, reflecting market trends. The C.O.I.F. investments yielded gross income at relatively modest interest rates, increasing slightly towards the year end.

Sale of publications, including the special Centenary Volume 112A and Occasional Publication No. 1, and goods continued to contribute significantly to total income.

The Lloyds current account was closed at the beginning of the year.

Credit card transactions continued to be requested extensively by Members and non-member Subscribers.

The Accounts for 1994, which are not yet available, will be tabled at the Annual General Meeting and published subsequently in the *Bulletin*. Members wishing to have copies before the Annual General Meeting are asked to apply to the Honorary Treasurer.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club will be held in the Ante-room of the Sherfield Building, Imperial College, London SW7 at 6 p.m. on Tuesday, 23 May 1995.

AGENDA

1. Minutes of the 1994 Annual General Meeting (see *Bull. Brit. Orn. Cl.* 114: 137).
2. Report of the Committee and Accounts for 1994.
3. The *Bulletin*.
4. The election of Officers. The Committee proposes that:
   (i) Dr D. W. Snow be re-elected Editor.
   (ii) Mrs A. M. Moore be re-elected Honorary Secretary until 31 December 1995 and Commander M. B. Casement, O.B.E., R.N. (Retd), be elected to succeed her from 1 January 1996.
   (iii) Mr S. J. Farnsworth be re-elected Honorary Treasurer.
   (iv) Dr R. P. Prŷs-Jones and Mr N. H. F. Stone be elected as members of the Committee (*vice* Dr J. F. Monk and Dr R. A. Cheke who retire by rotation).
5. Any other business of which notice shall have been given in accordance with Rule (12).

By Order of the Committee
AMBERLEY M. MOORE, *Honorary Secretary*

The eight hundred and forty-fourth meeting of the Club was held on Tuesday, 4 October 1994, at 6.15 p.m. at Imperial College, in the Rector's House. 29 Members and 35 Guests attended.

Members attending were: D. GRIFFIN (*Chairman*), T. M. GULLICK (*who introduced the speaker*), M. A. ADCOCK, Dr J. S. ASH, Miss H. BAKER, P. J. BELMAN, Mrs D. BRADLEY, P. J. BULL, D. R. CALDER, Cdr M. B. CASEMENT, R. D. CHANCELLOR, Professor R. CHANDLER, Dr R. A. CHEKE, S. J. FARNSWORTH, Revd T. W. GLADWIN, R. H. KETTLE, I. T. LEWIS, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, P. J. OLIVER, R. E. F. PEAL, R. C. PRICE, M. L. R. ROMER, Dr C. RYALL, D. S. SALT, P. WILLIAM SMITH, S. A. H. STATHAM, N. H. F. STONE.

Guests attending were: RAFAEL HEREDIA (*Speaker*), S. DE ALBUQUERQUE, M. ANDREWS, Sir JOHN BADENOCH, Mrs J. BULL, Mrs J. CALDER, M. H. CARBOURN-SMITH, C. E. J. CARTER, Dr P. J. CASSELTON, T. B. CLARK, Dr D. CLARKE, Mrs J. CLARKE, T. R. COOKE, M. J. COTTRELL, Mrs F. FARNSWORTH, Miss J. FENTON, J. FRANCIS, Mrs J. GLADWIN, Mrs K. GULLICK, Mrs R. HEREDIA, Dr B. HEREDIA, Mrs B. HEREDIA, Mrs S. LEWIS, W. MAKINS, Mrs F. MAKINS, D. MILNE, P. J. MOORE, R. NEWTON, Mrs E. NEWTON, A. NUSSEY, C. J. PARKER, Mrs M-C. PARKER, Mrs B. PEAL, Mrs S. SMITH, M. WALTON.

After supper Mr Gullick introduced Rafael Heredia who spoke on his work with Lammergeier in the Pyrenees since 1970. A summary of his talk appears below.

The Spanish population of the Lammergeier *Gypaetus barbatus* has shrunk from virtually countrywide to only the Pyrenees. Poison (mostly for wolves and foxes), the gun and egg collecting were responsible, and the last bird outside the Pyrenees was poisoned in the Sierra Cazorla in 1986.

The Pyrenees has an estimated 70% of the European population; small numbers in Corsica and the Balkans, including Crete, are under extreme threat and both information and tight conservation are lacking. The massive re-introduction programme in the Alps may or may not succeed; none of the released birds has yet bred in the wild.

In the Spanish Pyrenees, however, the population has been studied and aided. Luckily the Pyrenees are without wolves and the greatest enemy of the Lammergeier, strychnine poison, was never in wide use as elsewhere. The main problems have been nest robbing and unintentional human disturbance, also occasional food shortage. These threats are being countered by the watching of the more vulnerable nest sites, political intervention when tourist development threatens, and supplementary 'bone-stocked' feeding sites.

Feeding sites ensure food for chicks and perhaps also keep the sub-adult vultures in safer habitat than that to which they might stray if food became too short.

Detailed monitoring of movements and studies including 'wing-tagging' and radio-tracking have shown that sub-adult mortality is much lower than expected. For example, out of 16 birds wing-tagged since 1986 all but 2 were still alive this year and each one survived its first full year. However is seems that the Lammergeier may well need to be 12 years old before it becomes a regular (annual) and effective breeder.

Studies have also shown that the bone breaking (by dropping) is not to expose bone marrow but to splinter the bone into pieces which the bird can swallow whole, or even smaller pieces, which can be fed to the chick. Dead migrant birds exposed by the melting snows, even the size of a Robin, are frequently found in nests. Bone itself is much the main food and the chief sources are chamois, particularly after trophy hunting, marmots and hill sheep. Large areas for controlled chamois hunting will benefit the Lammergeier. The withdrawal of the EU subsidy on hill sheep would be a severe blow.

Happily it seems that the Pyrenees population is showing a strong increase. Although surveys before 1984 cannot be considered thorough the number of pairs occupying breeding territories has increased from 48 in 1984 to 73 in 1994. Further optimism is justified by the fact that mortality of sub-adults is low, and the numbers reaching maturity, and therefore new breeding pairs, are increasing each year. This we can hope may lead to a gradual re-occupation of the old range elsewhere in Spain, such as the Picos de Europa.

The days of study and experiment are past. The need now is for an increasing programme of nest vigilance, supplementary feeding and an understanding (voluntary or enforced) by tourist and social infrastructural developers that their activities should not affect the survival of the magnificent "Bone Breaker".

After the dinner members and guests contributed over £400 to the fund BirdLife International is administering on behalf on Rafael Heredia, which is devoted solely to nest vigilance and supplementary feeding.

The eight hundred and forty-fifth meeting of the Club was held on Tuesday, 8 November 1994, at 6.15 p.m. in the Ante-room of the Sherfield Building of Imperial College, South Kensington. 27 Members and 8 Guests attended.

Members attending were: D. GRIFFIN (*Chairman*), The Reverend T. W. GLADWIN (*Speaker*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, I. R. BISHOP, Mrs D. M. BRADLEY, D. R. CALDER, Cdr M. B. CASEMENT, Dr R. A. CHEKE, J. H. ELGOOD, S. J. FARNSWORTH, G. D. FIELD, A. GIBBS, Dr L. G. GRIMES, C. A. R. HELM, Ms R-M. JONES, R. H. KETTLE, D. J. MONTIER, Dr J. F. MONK, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, J. G. PARKER, R. E. F. PEAL, Dr N. J. SKINNER, N. H. F. STONE.

Guests attending were: Mrs D. ANSTEY, Mrs G. BONHAM, Mrs J. GLADWIN, Mrs S. GRIFFIN, Mrs J. GRIMES, Dr A. MELLAND, Mrs M. MONTIER, P. J. MOORE.

The Vice-chairman, the Reverend T. W. Gladwin, was the speaker after supper. He spoke of spring and autumn visits he had made in the east of the United States of America. Besides an account of the avifauna of the Appalachian Mountains and their watershed he gave an overview of the natural history of the Georgian seaboard and its islands, and of the wooded swamplands of the coastal area. He described the habitats and feeding ecology of the birds, particularly the warblers, over the area and discussed some of the effects of air pollution in the eastern deciduous forests and montane woodland of the Appalachians.

The eight hundred and forty-sixth meeting of the Club was held on Tuesday, 6 December 1994, at 6.15 p.m. in the Ante-room of the Sherfield Building of Imperial College, South Kensington. 25 Members and 12 Guests attended.

Members attending were: The Revd T. W. GLADWIN (*in the Chair*), M. P. WALTERS (*Speaker*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, I. R. BISHOP, D. R. CALDER, Dr M. CARSWELL, Cdr M. B. CASEMENT, Professor R. CHANDLER, Dr R. A. CHEKE, A. GIBBS, C. A. R. HELM, Ms R-M. JONES, Dr C. F. MANN, D. J. MONTIER, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, R. E. F. PEAL, Dr R. PRŶS-JONES, Dr R. C. SELF, Dr D. W. SNOW, N. H. F. STONE, Mrs F. E. WARR, Professor W. E. WATERS.

Guests attending were: Mrs G. BONHAM, Mrs J. CALDER, S. DROVETSKII, Mrs J. GLADWIN, Miss C. HOFF, Mrs M. MONTIER, P. J. MOORE, P. MULLER, Mrs S. STONE, J. WARR, G. VOELKER.

After supper the Vice-Chairman congratulated Mr Maurice Adcock on his recent award of the Bernard Tucker Medal by the British Trust for Ornithology. Mr Gladwin said that Mr Adcock has been involved for many years in ringing projects of the Trust, particularly innovatory work on the seabirds of the south Essex coast. It was with great pleasure that members heard that this work has been recognised by the Trust's award.

Mr Michael Walters of the Sub-department of Ornithology of the British Museum spoke on the history of ornithology. He traced its history from the earliest times to the end of the nineteenth century. Some of the most important ornithologists over the centuries were discussed, commencing with Aristotle, whose writings remained the principal authority on the subject for 1500 years. It was in the eighteenth century with the work of Linnaeus, Brisson and Buffon that ornithology really emerged as the serious discipline we know today. Brief diversions into general zoology were necessary to explain the gradual development of the mutability of species, and some of the more bizarre taxonomic arrangements of the past, such as the Quinary system. The work of the world's leading museums and the voyages of exploration which provided the specimens that stocked these museums were discussed. It was pointed out that while the eighteenth century was an era of expansion in both discovery and knowledge, it was also an era of considerable extinction, and unfortunately the importance of much of the material being collected was not appreciated at the time. As a result, many unique specimens have now been lost. The tragic dispersal of the great collection of Sir Ashton Lever meant that many unique types of now extinct species were lost for ever. The introduction of the use of trinomials was a matter which occupied the closing part of the talk. Many portraits of leading ornithologists accompanied the discussion, where possible with pictures of the birds named after them.

Red-billed Tropicbird *Phaethon aethereus* in the Azores: first breeding record for Europe

by Robert W. Furness & Luis R. Monteiro

Received 17 December 1993

In September 1993 we visited many islands in the Azores to study seabird populations and ecology. We spent four days and three nights on a small islet 'Ilheu de Baixo' (39°00′N, 27°57′W) off Graciosa in the central group of the Azores archipelago. This islet has steep cliffs of volcanic rock, an area of boulders below one cliff, and a cap of compact gravelly soil crowning the summit. The highest point of the crown is 73 m above sea level. The islet has populations of Cory's Shearwater *Calonectris diomedea* (about 150 burrows contained well-grown chicks during our visit, with most occupied burrows between boulders or in shallow soil below the cliffs), Madeiran Storm Petrel *Oceanodroma castro* (large numbers were visiting nest sites in preparation for breeding, most activity being over the boulder-fields below the cliffs), Little Shearwater *Puffinus assimilis* (small numbers were active at night amongst the storm petrels but this species is a winter breeder here), Yellow-legged Gulls *Larus cachinnans atlantis* (in May 1993 about 300 pairs were estimated to breed in the colonies, some on an area of boulder-field but most on the summit cap of the islet; during our visit adults were attending the colony but their chicks had fledged and almost all fledglings had dispersed). Small numbers of Common Terns *Sterna hirundo* were present on the edges of the islet but breeding had clearly finished much earlier in the summer.

The upper slopes of the islet are difficult to reach as they are surrounded by a vertical belt of rock or compacted grit cliff with only one point of ascent, and that being slightly awkward. The upper slopes consist of patches of bare grit, short grass and areas of densely growing flowering plants. In September these had died due to the normal summer shortage of water and were standing to form a canopy of flower stems and heads about 1 m off the soil surface. The majority of the gull territories lay over much of these slopes, with nest sites still evident, though the postbreeding adult gulls were mainly forming large flocks on the less vegetated patches. Close to the summit of the islet and on the edge of the gull colony we found a Red-billed Tropicbird *Phaethon aethereus* incubating a single egg in a scrape underneath the thin canopy of dried plants. The bird was immediately recognisable to species because of its size, white plumage with characteristic black markings on the nape, back and shoulders, its heavy blood-red bill, narrow pointed wings and broad tail (though the elongated white central tail feather was broken short). It remained with its egg despite our approaching to within 1 m, turned to face us, arched its wings, raised its tail and neck feathers and opened its bill in threat. About 1 m from the nest scrape lay a second egg, closely similar in size and markings to the one in the nest, but pierced and empty. We assume that this broken egg represented an earlier clutch laid by the same pair, but lost to gull predation, and that the egg being incubated was a replacement clutch. We left the bird on its egg and returned about an hour later with ringing and measuring equipment and cameras.

The egg measured 56.6 by 43.4 mm and was ovate (neither end being markedly broader), matt off-white with considerable rusty-brown speckling and smudging. The incubating bird weighed 680 g, and measurements were: wing length (maximum chord) 308 mm, head-plus-bill 116 mm, bill length (culmen) 59.3 mm, bill depth at gonys 14.1 mm, bill depth at nostril 18.5 mm. These measurements fall within the range given for the tropical North Atlantic subspecies *P. a. mesonauta* (Cramp & Simmons 1977), which would be the most likely to occur since this subspecies breeds in the Cape Verde Islands and West Indies. The bird had a bright blood-red bill, a pronounced black eye-stripe and jet black barring on the back, characters typical of this subspecies and ruling out the nominate *P. a. aethereus* (South Atlantic) and *P. a. indicus* (Indian Ocean). We ringed the bird, put a small spot on its forehead with an indelible marker pen, and released it back onto its egg. It immediately postured aggressively, uttering a harsh and loud churring noise for about ten seconds before settling onto its egg and resuming incubation. We returned to visit the nest after 4, 15 and 24 hours, finding the same individual on the egg on each visit. The partner was never seen and the incubating bird was not seen away from its nest. However. we left the islet on 24 September so were unable to continue observations. During a very brief return visit in late October 1993 there was no sign of the adults and the nest site was empty, so the breeding attempt clearly failed. Since the interval between egg loss and laying of a replacement clutch is about 42–112 days and incubation lasts for about 43 days (Cramp & Simmons 1977), the first egg was probably laid in May, and so the tropicbird would have been breeding alongside the Yellow-legged Gulls and on the edge of that colony. The gull colony probably provided the stimulus for the birds to attempt breeding on this islet, tropicbirds being highly social breeders.

There are not only no previous breeding records in Europe, but also very few European records of vagrant Red-billed Tropicbirds. The species is not migratory and rarely occurs outside its normal tropical range. Red-billed Tropicbird was listed by Le Grand (1983) as a possible but unconfirmed very rare or accidental visitor to the Azores. Cramp & Simmons (1977) report two records from Madeira; one in 1893, and one in 1966. However, in the last few years there seem to have been an unusually high number of sightings north of the normal range of Cape Verde birds. In addition to our breeding record, there is a recent unreported sighting of two tropicbirds near Condor Bank, about 150 km SW of Graciosa, in late October 1991 (Bill Herbert, pers. comm.). Sight records have been reported from the Canaries (24 March, 12 and 19 April 1991; 23 May 1992; Anon 1991, 1992) and a dead immature was found on a beach in Suffolk in February 1993

(Anon 1993). This last may be of doubtful status, as was a winter beached tropicbird in the Netherlands in 1985 (Bruinzeel 1986). Whether the sight records from the Canaries and our breeding record represent the start of a range extension to northern Macaronesia is not clear, nor is the source of these birds. Bannerman & Bannerman (1968) reported that there had been "an alarming decline" in numbers and breeding distribution of Red-billed Tropicbirds in the Cape Verde Islands during the 1950s and 60s, the population having fallen to less than 1000 individuals by the late 1960s (de Naurois 1969). We have no information on more recent population trends in that group. Le Grand *et al.* (1984) provide no information subsequent to the surveys of de Naurois (1969). However, it is perhaps as likely that the birds breeding in the Azores originated from the population in the West Indies as from the Cape Verde Islands. Halewyn & Norton (1984) considered the population of Red-billed Tropicbirds in the Caribbean to be above 1600 pairs and probably stable in numbers, so it seems that the west Atlantic holds about three-quarters of the population of this subspecies.

Acknowledgements

Fieldwork was supported by grants from Junta Nacional de Investigação Cientifica e Tecnólogica grants BD/2289/92-IG and STRDB/C/MAR/228/92. We thank W.R.P. Bourne for advice on recent records of tropicbirds.

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Fea's Petrel *Pterodroma feae* in the Azores

by Luis R. Monteiro & Robert W. Furness

Received 20 December 1993

Three species of gadfly petrel closely related to the Soft-plumaged Petrel *Pterodroma mollis* of the southern hemisphere occur in the North Atlantic (Bourne 1983, in press). All three are Red Data Book species, listed as rare or endangered (Collar & Stuart 1985). The Bermuda Petrel *P. cahow* breeds only in Bermuda where it has been brought back from the verge of extinction by intensive conservation measures (Lever 1984). The Freira (Madeira Petrel) *P. madeira* is extremely rare, with a population of less than 50 pairs nesting in a single colony on Madeira (Buckle & Zino 1989). Fea's Petrel (Gon-gon or Bugio Freira) *P. feae* nests on Bugio in the Desertas (near Madeira) and in the Cape Verde Islands, and has a total population estimated at a few hundred pairs (Zino & Zino 1986). Bourne (1965) predicted that an undiscovered *Pterodroma* intermediate in character between *P. cahow* and *P. feae* might exist in the Azores, where little survey of the status and numbers of seabirds had then been carried out. In 1990 a *Pterodroma* was caught at night at a seabird colony in the Azores. That bird was found to be closely similar in appearance and in most measurements to *P. feae* from Bugio, but with a longer tail, matching that of *P. cahow* (Bibby & del Nevo 1991). These authors concluded their account of this specimen by suggesting that a population of *Pterodroma* intermediate between *P. cahow* and *P. feae* may breed in the Azores, and quoted W. R. P. Bourne as suggesting that such an intermediate might require *feae* and *cahow* to be classified as a single species, presumably with the Azores birds as a third subspecies.

In September 1993 we visited many islands in the Azores archipelago to study seabird populations and ecology. We spent several nights at each of various sites mist-netting Madeiran Storm Petrels *Oceanodroma castro*, Little Shearwaters *Puffinus assimilis* and Bulwer's Petrels *Bulweria bulwerii*, and catching Cory's Shearwaters *Calonectris diomedea* by hand. On most nights between 14 and 26 September 1993 we caught 40–160 petrels and shearwaters in two 18 m four-shelf mist nets. Almost all birds were caught between 2100 and 2300 hrs local time as numbers flying over the colonies were much reduced after about 2230 hrs, and we generally ceased netting before midnight. A first-quarter moon combined with clear skies seemed to keep activity of Cory's Shearwaters low until after the moon had set, but seemed to have little effect on the timing of storm petrel activity.

On our last night we caught 150 storm petrels without using a tape lure, the nets being set on the cliff-top edge of a small islet. At 2310 hrs, by which time the capture rate had fallen close to zero, a gadfly petrel flew into the net. Having handled many thousands of Soft-plumaged Petrels on Gough Island, RWF immediately recognised that the bird was not *Pterodroma mollis* as it was very much more bulky, had a uniformly dark underwing and a conspicuously heavy bill, and lacked the pectoral band normally present in that species (Plate 1). It lacked the pale rump of *P. cahow* or *P. hasitata*, and its large size and massive bill excluded *P. madeira*. We therefore identified it as a specimen of *P. feae* either as a vagrant from Bugio or the Cape Verde Islands or as an Azores bird from an unknown breeding population.

The bird was white below, grey-brown above but the dorsal surface of the tail was a distinctively pale ashy-grey. It had a dark patch around the eye, dark pectoral spots covered by the folded wings but no band across the breast. The eye was brown, the underwing dark and uniform apart from white inner underwing coverts at the leading edge of the wing and paler grey-brown axillaries with off-white bases. The bill was black and impressively massive, the legs and proximal half of the feet pink, the distal half and nails being inky black. The white flanks were slightly mottled with grey (Plate 1). In all respects the plumage and soft parts agreed with the description of the bird caught by Bibby & del Nevo (1991) except that they described the axillaries as white whereas in our bird they were pale proximally but grey-brown distally. Our specimen had a brood patch that had been completely bare but was now about half refeathered. It had no active moult of flight feathers and no sign of heterogeneous ages of coverts.

We retained the bird in a large bag until daylight in order to be able to examine it thoroughly in good light. In the early morning we searched its plumage for feather lice. The lice we obtained were examined by Dr R. L. Palma, Museum of New Zealand, Wellington, and found to include an adult male *Halipeurus theresae*, a species previously found on *P. feae* from the Desertas (Zonfrillo 1993), and *P. axillaris* from the Chatham Islands, New Zealand (Pilgrim & Palma 1982), but not found on *P. madeira* or *P. cahow* (Zonfrillo 1993). We also took a spot of blood which could be used for DNA analysis to compare among *Pterodroma* taxa, and ringed the bird.

On release, the bird flew low over the water with rapid wingbeats, the pale grey tail being a pronounced feature in flight in contrast to the rather uniform and dark upperwing and back. Haney *et al.* (1993) report a sight record of a bird identified as *P. feae* in the western Atlantic, and also remark on the pale tail as one feature of this species.

Because we were aware of the critical nature of the measurements in assigning the individual to a taxon (and because we wondered whether it might be the same individual caught but not ringed by Bibby & del Nevo) the bird was measured and results recorded independently by LRM and RWF. Our measurements of bill length differed by 0.4 mm but all other measurements were within 0.2 mm. Our measurements, those reported by Bibby & del Nevo (1991) and measurements of *P. feae* from Bugio and the Cape Verde Islands from live birds and from museum skins (data from Cramp & Simmons 1977 and from the Museum of Natural History, Paris, measured by LRM) are given in Table 1 for comparison.

Some useful comparisons can be made from these data. The two Azores specimens are clearly too large to be *P. madeira*. Our bird was closely similar in measurements to the specimen caught by Bibby & del Nevo (1991) except in tail length. Our specimen had a tail length of

Plate 1. The bird, identified as *Pterodroma feae*, caught in the Azores in September 1993.

TABLE 1

Measurements of birds from North Atlantic *Pterodroma* populations. Where data are available, ranges are given in parentheses below means. Sources are listed below the table.

Locality/species	Azores	Azores	Bugio	Bugio	*P. feae*	C. Verde	C. Verde	*P. cahow*	*P. madeira*
Live or skin	L	L	L	S	S	S	S	S	L
Reference	1	2	3	1	4	5	1	2	3
Weight (g)	295	325	311 (275–355)	325 (295–336)	—	—	—	—	204 (175–231)
Wing length	269.5	270	268 (258–282)	268.8 (267–272)	268 (263–273)	266	266.7 (264–272)	260	247 (241–254)
Tail length	112.0	128	110 (106–155)	111.2 (103–120)	113 (108–115)	105	103.9 (97–115)	124	105 (100–108)
Tarsus	35.0	35.6	35.8 (32–41)	35.6 (34–36)	35.0 (32–38)	34.6	34.9 (33–36)	36	32.9 (29.5–38)
Head	73.1	—	—	72.1 (71–73)	—	—	71.1 (68–74)	—	—
Bill length	28.5	29.7	29.1 (27–31)	29.1 (28–30)	28.4 (26–30)	28.6	28.5 (27–30)	30	25.0 (22–26)
Bill depth at gonys	12.8	—	—	12.5 (12.1–12.9)	—	—	11.5 (10.6–12.3)	—	—
Bill depth at nostril	15.0	—	14.7 (13–16)	14.5 (13.1–15.4)	—	—	13.4 (12.6–14.5)	—	11.2 (10–12)
Mid-toe	—	45.0	46.4 (42–50)	—	45.0 (41–47)	46.1	—	51	42.5 (41.5–43)
Sample size	1	1	17–40	4–5	18	12–15	7–11	1	7–13

Refs. 1 this study (Bugio and C. Verde columns are measurements of study skins in the Paris Museum of Natural History); 2 Bibby & del Nevo (1991); 3 Zino & Zino (1986); 4 Cramp & Simmons (1977); 5 Jouanin *et al.* (1969).

112 mm, which agrees almost exactly with that of birds from Bugio. We cannot say whether the much longer tail length recorded by Bibby & del Nevo (1991) is evidence of extensive variability in this character, or of difference in measurement technique. Setting aside their tail measurement, all other measurements from the two Azores specimens match the range of *P. feae* from Bugio, though bill depth (the most striking character of the bird in the hand) is close to the upper limit found in the Bugio population. The differences in measurements of the birds caught in the Azores by Bibby & del Nevo (1991) and ourselves seem to rule out the possibility that the same individual was caught twice.

It is noteworthy that *P. feae* from the Cape Verde Islands is generally smaller than our specimen from the Azores or the birds from Bugio. This is especially noticeable for the tail length and bill depth at gonys, though it is true of every character measured (Table 1). Comparing between measurements (made by LRM) of *P. feae* study skins from Bugio and from the Cape Verde Islands, now in the Paris Museum, tail length was significantly longer among the birds from Bugio ($t=2.34$, $P<0.05$) as was bill depth at gonys ($t=3.28$, $P<0.001$). The population of *P. feae* at Bugio is thought to be only a few dozen pairs, whereas several hundred pairs breed in the Cape Verde Islands (Cramp & Simmons 1977). The small size of the Bugio population and lack of compatibility of measurements of the Azores specimens with the Cape Verde birds strengthen the suspicion that there may be an Azores breeding population of *P. feae*, since the chances of two wandering birds from the very small Bugio population being caught at Azores seabird islets seem very small. However, although the distribution of the species at sea is not well known, in addition to occurring off the United States it has been recorded in Israel and regularly near the Canary Islands and off western Africa (Haney *et al.* 1993). With such a wide pelagic range, visits of non-breeders to the Azores would not be unexpected. The species is also known to associate at sea with Cory's Shearwaters (Lambert 1980, Haney *et al.* 1993) and rafting Cory's Shearwaters might attract non-breeding *P. feae* to Azores shearwater colonies. Although neither *P. mollis, P. feae* nor *P. madeira* appear in Le Grand's (1983) Azores checklist, a bird of one of these forms was seen at sea close to the Azores (37° 56′N, 20° 48′W) in August 1992 by Moore (in press).

Bibby & del Nevo (1991) suggested that the bird which they caught might nest on the islet where they caught it and that the lack of any characteristic *Pterodroma* calls at night could be attributed to the drowning effects of Cory's Shearwater calls. We visited the islet where they caught their bird during September 1993 and spent several nights mist-netting there. We spent two days censusing the Cory's Shearwater colony on that islet and ringing chicks. Using mark-recapture we estimated there to be rather less than 200 burrows containing Cory's Shearwater chicks. On the islet where we caught a *Pterodroma* we estimated the Cory's Shearwater population to be even smaller, with less than 100 chicks present during our visit. Thus we doubt that the shearwater activity would mask the calling of *Pterodroma* petrels if they were breeding on these islets. LRM has visited these islets in almost every month of the year without hearing any *Pterodroma* vocalisations. We are confident that gadfly petrels do not breed on accessible parts of either of the islets where birds were caught, as we thoroughly searched the islets for nests of shearwaters, storm petrels and Bulwer's Petrels and would almost certainly have located gadfly petrel adults or chicks if any had been present. Thus the breeding locality of *P. feae* in the Azores remains to be found. Small numbers might nest on sheer cliffs on the islets, or high up in the caldeiras of one or more of the larger islands, in habitat similar to that used by *P. madeira* in Madeira. The mountain habitat in the Azores is rarely visited by ornithologists and gadfly petrels could easily have gone undetected there, despite their characteristic nocturnal calls (James & Robertson 1985).

Our specimen had a partly refeathered brood patch. This cannot be taken as evidence of breeding status as pre-breeding petrels may develop brood patches during the breeding season, but we noted that the patch had been fully bare, whereas many pre-breeding petrels develop only an incomplete brood patch. If this was a breeding bird, refeathering in late September would imply incubation during July-August. Bibby & del Nevo (1991) found a moderately well developed brood patch on the bird they caught on 28 June 1990, which would also be compatible with incubation during July-August. This is reported to be the laying period of *P. feae* on Bugio, though the population in the Cape Verde Islands lays in December-January (Cramp & Simmons 1977).

Further investigation is required to determine whether *P. feae* breeds in the Azores, and if possible whether this represents a recent expansion of range or a relict population. Gadfly petrels are highly susceptible to rat predation of eggs and chicks (Collar & Stuart 1985), and the abundance of black rats *Rattus rattus* on most of the Azores islands and some islets must be a major cause for concern. It is possible that the Azores population of *P. feae*, if it exists, may already be close to extinction as a consequence of rats.

Postscript. On a return visit to the Azores in August 1994 we retrapped the same individual *P. feae* at the same site.

Acknowledgements

Fieldwork was supported by grants from Junta Nacional de Investigação Cientifica e Tecnologica, grants BD/2289/92-IG and STRDB/C/MAR/228/92. We thank W. R. P. Bourne and B. Zonfrillo for advice, and Dr R. L. Palma for identifying feather lice.

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Seasonal distribution of the Lined Seedeater *Sporophila lineola*

by José Maria Cardoso da Silva

Received 21 February 1994

Long-distance migration is more pronounced in Nearctic than Neotropical birds. However, recent studies (e.g. summaries in Sick 1983, 1985; Willis 1990) indicate that many more species of Neotropical birds undertake extensive migrations than was previously thought; but the migration patterns of most of them remain unknown. Even very basic data such as general schedules of movements and limits of wintering and breeding areas are scarce (Marantz & Remsen 1991).

One such species is the Lined Seedeater *Sporophila lineola*. It has two populations that can only be distinguished by voice: one that breeds in the Caatinga region of northeastern Brazil, and another that breeds in southeastern Brazil, Paraguay and Argentina (Vielliard 1987). The Caatinga population's song (*dit dit dit drdrdrdr*) is quite distinct from that of the southern population (*didididididee* or *krrrrrrre*, sometimes with no terminal 'chirp', sometimes with more than one) (Schwartz 1975, Vielliard 1987). The song of the southeastern population is, in turn, very similar to that of Lesson's Seedeater *S. bouvronides* (Schwartz 1975), a close relative which breeds in the Llanos region and migrates to the Amazon valley afterwards (Ridgely & Tudor 1989).

Schwartz (1975) and Thomas (1979) recorded the Lined Seedeater as a non-breeding species in the Llanos region between June–July and November–December, just when Lesson's Seedeater was observed breeding there. More interesting still are the reports that adult males of the Lined Seedeater sing during the migration period in Surinam (Haverschmidt 1968) as well as in north-central Venezuela (Schwartz 1975). In both cases, the described song is similar to that recorded for the Caatinga population (Vielliard 1987), whose seasonal movements were reported by Sales (1989). These observations suggest that there may be a migratory movement by Lined Seedeaters between the Caatinga and Llanos regions.

No vocal record of the southern population is known outside its breeding area. However, there is good evidence that it is also a seasonal migrant (Sick 1985, Ridgely & Tudor 1989). Details of its movements are unknown.

In this paper, I analyse the geographical and seasonal distribution of the two populations of the Lined Seedeater in order to: (a) identify their possible migratory routes; (b) delimit roughly their wintering and breeding areas; (c) define their basic migratory schedules; and (d) discuss their patterns of migration in relation to the climate and food availability in the breeding and wintering areas.

Methods

Because individuals of the Lined Seedeater sing during migration (Schwartz 1975), I attempted to collect data on this behaviour in several localities in Brazilian Amazonia between 1981 and 1993. In addition, I used records of vocal migrant birds in other areas gathered from literature to supplement my own data. These vocal records formed the basis upon which I traced the 'migration tracks' of the two Lined Seedeater populations. A 'migration track' is defined as the track or corridor generated by connecting the sites where vocal records of a determined population were collected with its respective breeding area, using the minimum-distance criterion. To test the hypothesis that these 'migratory tracks' adequately represent the migratory routes of the Lined Seedeater, I analysed the temporal distribution of records of Lined Seedeaters in the major regions along these 'migration tracks'. If the records in successive regions are complementary, the hypothesis that the 'migration tracks' are migratory routes is supported. Although there are several sources of bias (see Remsen & Parker 1990), the careful plotting of all available records of one species has been considered the simplest method for defining roughly the migration patterns of some South American species (Lanyon 1978, Marini & Cavalcanti 1990, Remsen & Parker 1990, Marantz & Remsen 1991).

I used records from the following sources: (a) my personal observations in several sites in Brazil; (b) the complete list of observations made by G. F. Mees (*in litt.*) in Surinam; (c) label information on the adult male skin specimens of Lined Seedeaters from the following museums: American Museum of Natural History (AMNH), National Museum of Natural History (NMNH), Carnegie Museum of Natural History (CM), Museum of Zoology of University of Michigan (UMMZ), Museu de História Natural Bernardino Rivadávia (MHNBR), Museum of Natural Science, Louisiana State University (LSUMZ), Field Museum of Natural History (FMNH), Museu Nacional de História Natural, Bolivia (MBHN), Museu de História Natural Capão do Imbuia (MHNCI), Alexander Koenig Zoological Research Institute and Museum (AKZM), Museu Paraense Emílio Goeldi (MPEG), Museu de Zoologia da Universidade de São Paulo (MZUSP), Museu de História Natural Costa Lima (MHNCL), Museu Nacional, Rio de Janeiro (MNRJ) and Zoological Museum, University of Copenhagen (ZMUC). I considered only adult male specimens in this analysis because *lineola* females and immature males are evidently indistinguishable from those of *bouvronides*. To combine specimens and observation records, I considered all individuals recorded in a single observation day as equivalent to one specimen record. The list of all records used in this analysis is available on request.

Results

Caatinga population

The 'migration track' of the Caatinga population includes points in north-central Venezuela (Schwartz 1975), Surinam (Haverschmidt 1968, G. F. Mees *in litt.*) and eastern Pará, between the rivers Tocantins and Gurupi. In eastern Pará, I made long-term observations in Belém (01°27′S, 48°29′W, 1981–1984) and Paragominas (03°00′S, 47°18′W, 1990–91). At these sites, singing individuals were observed only between November and January. Adult males may sing in the same place for up to 5–7 consecutive days, only to disappear afterwards. This is an important point, because to one making only short-term observations this behaviour could wrongly suggest a breeding situation.

I analysed the specimens and sight records of the Lined Seedeater along this 'migration track' (Fig. 1). The Caatinga records (n=21) are between December and June. This period can be regarded as a rough estimate of the breeding season for this population. Records for eastern Pará (n=133) show two well-marked peaks: May–August, when Caatinga individuals are expected to be leaving their breeding area, and November–January when they are expected to be returning to start a new reproductive season (Fig. 1). Because I made long-term monthly observations in eastern Pará, the lack of records of Lined Seedeaters in February–April and September–October in this region indicates their absence rather than lack of sampling. The records for the region

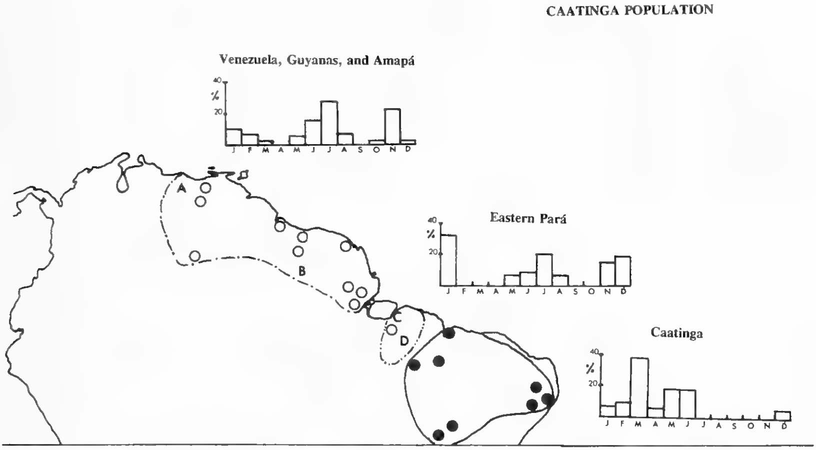

Figure 1. Seasonal distribution of specimen and sight records along the 'migration track' of the Caatinga population of the Lined Seedeater. Solid symbols represent possible breeding sites, open symbols localities where wintering individuals have been recorded. Sites where singing individuals were recorded are indicated by letters (A=central-north Venezuela, B=Surinam, C=Belém, D=Paragominas). In the graphs, vertical axis indicates percentage of the records, horizontal axis months.

formed by Amapá, the Guianas and north-central Venezeula (n=56) are quite similar to those for eastern Pará (Fig. 1), but there are two differences: (a) the presumed absence of Lined Seedeaters in this region in September but not in October and (b) a small number of records (specimens collected in Cayenne and housed in CM) in February (3) and March (1), whose dates fall within the breeding season of the Caatinga population. The first difference is clearly misleading, because in a year-round study at one site in the Llanos region Thomas (1979) recorded Lined Seedeaters there in September. The second difference is more intriguing. Perhaps these records are of delayed individuals of the Caatinga population or, alternatively, they are of individuals from the southern population.

Southern population

I recorded individuals singing the southern population song at only one place in central Amazonia, Santarém (02°26′S, 54°42′W), where I observed adult males singing in the tops of small trees in várzea savannas in September and October 1985. This is the only vocal record known for this population outside its breeding area. Because no record of the Caatinga population song is known from central and western Amazonia, I have included all this region, from the left bank of the river Tocantins to southern Colombia and eastern Peru, in the 'migration track' of the southern population.

Again, specimen and sight records were plotted to verify whether they are complementary amongst the major regions along this

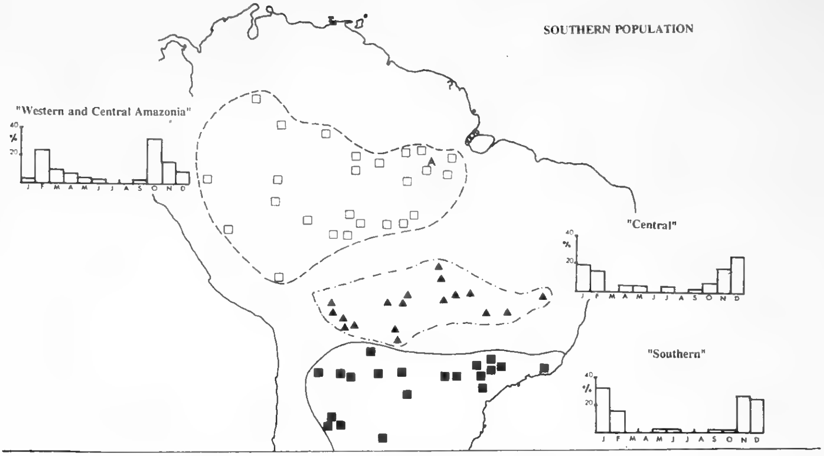

Figure 2. Seasonal distribution of specimen and sight records along the 'migratory track' of the southern population of the Lined Seedeater. Solid squares represent possible breeding sites; solid triangles and open squares represent records of wintering individuals. Some localities with solid triangles may also be breeding sites. Question mark represents the doubtful records in French Guiana which may be of individuals from the southern population. A= Santarém, the only locality in Amazonia where singing individuals of the southern population were recorded. In the graphs, vertical axis indicates percentage of the records, horizontal axis months.

'migration track'. Records for the 'southern' region (southeastern Brazil, Paraguay and Argentina), where the Lined Seedeater is known to breed (Hartert & Venturi 1909, Sick 1985, Ridgely & Tudor 1989), are mainly between November and February with a few records (2,4%; n=83) between May and October (Fig. 2). The Lined Seedeater was recorded for the 'central' region (which includes Minas Gerais, Goiás, Mato Grosso do Sul, Mato Grosso, Tocantins and Bolivia) almost all year (n=39), but mainly (69% of records) between November and February (Fig. 2), a pattern similar to that of the 'southern' region. This may indicate that besides being a passage zone for migratory individuals coming from the south, the 'central' region is also, at least in part, a breeding area. In central and western Amazonia (Fig. 2), Lined Seedeaters are recorded almost year-round but mainly between February and November (91,9%; n=112). The absence of specimen records in June and August is clearly fortuitous, as local residents in Santarém informed me that Lined Seedeaters are found there during these months. I regard this information as reliable because the Lined Seedeater is a well-known cage-bird and my informants live very close to where I made my observations. Hence, the records in central and western Amazonia are somewhat complementary to those from the 'southern' and 'central' regions (Fig. 2). This pattern supports the hypothesis that these three regions form a single 'migration track' for the southern populations of the Lined Seedeater.

Discussion

Migratory patterns

The basic migratory patterns of the Lined Seedeater populations are simple. The population that breeds in the Caatinga region between January and May–June (Sales 1989) migrates to the Llanos region and Guianas across eastern Pará. The southern population that is known to breed in southeastern Brazil, Paraguay and Argentina between December and February (Hartert & Venturi 1909, Ridgely & Tudor 1989) migrates through the 'central' region to central and western Amazonia (and possibly French Guiana).

There are still three points that deserve further investigation. First, it is not certain whether the records in February and March in French Guiana are of migrants from the southern population or delayed individuals from the Caatinga population. If the former is the case, then this region would be unique in that slight spatial, but not temporal, overlap exists between the wintering areas of the two populations of the Lined Seedeater. Second, the presence of the Lined Seedeater almost all year in central and western Amazonia is intriguing. Sick (1985) reported Lined Seedeaters in southeastern Brazil (Espírito Santo and Paraná) between December and March–April. Records in March–April do not agree with the pattern derived here from specimen records (Fig. 2). Because detailed observations at one specific site, such as those made by H. Sick in Espírito Santo, provide a more accurate picture of the seasonal distribution of a species than the crude pattern generated by specimen records (Remsen & Parker 1990), it is possible that populations from the southern region have different migration schedules: the northernmost population may arrive in and leave its breeding area later than the more southerly populations. Such a difference in timing could explain the species' presence year-round in central and western Amazonia. Third, the status of the population that occurs in the 'central' region still needs to be determined. Cintra & Yamashita (1990) reported that the occurrence of the Lined Seedeater in the Pantanal region is seasonal (January–May), but they made no mention of whether it breeds there. Only detailed year-round field studies in the above-mentioned critical areas can adequately resolve these three questions.

So far as I can determine, regular migratory movement between Caatinga and Llanos, such as that exhibited by the Caatinga population of the Lined Seedeater, is not shared with any other species of bird. In contrast, the pattern shown by the southern population is, at least in part, quite similar to that reported for *Sporophila caerulescens* (Remsen & Hunn 1979) and many other species of birds besides seedeaters (Sick 1985).

The trophic basis for migration

As Remsen & Hunn (1979) and Sick (1985) have pointed out, the migratory movements of many species of the genus *Sporophila* are undoubtedly attuned to wet and dry seasons and the effect of these on grass seed production in the breeding areas. This effect is much more important for species that are stem-gleaner specialists, i.e. those that feed mainly on seeds still borne on the stalks, than to species that are able to feed on fallen seeds on the ground (Remsen & Hunn 1979). This hypothesis is fully supported by the seasonal movements of the Lined Seedeater, a stem-gleaner specialist.

The Caatinga population breeds when rains reach their maximum peak in this region (January to May; Nimer 1979) and migrates during the well-marked regional dry season (June to December). The breeding season of the southern population is also well correlated with the maximum rainfall in that region (November–December to January–February; Nimer 1979), but the period of migration can be only partially predicted by the regional dry season (May–June to September–October). These two simple correlations suggest that migrations of the Caatinga population are probably determined more by the rainfall pattern than are those of the southern population.

Remsen & Hunn (1979) suggested that in western Amazonia, the production of grass seeds should be almost continuous, presumably as a result of the almost daily rainfall there. However, Junk (1970) pointed out that in the várzea grasslands of this region (a habitat commonly used by Lined Seedeaters during migration; D. C. Oren, pers. comm.) the production of grass seed is highly seasonal. Unfortunately, phenological data from western and central Amazonia are inadequate to evaluate or reconcile this apparent contradiction. On the other hand, the presence of Lined Seedeaters, from the Caatinga population, in the Llanos is well correlated with the peak of the production of grass seed reported for this region (Sarmiento 1979). This period (June–January) also coincides with the breeding season of other seedeater species (e.g. *S. bouvronides*; Schwartz 1975, Thomas 1979). Thus, at least for the Caatinga population of the Lined Seedeater, the development and maintenance of its migratory behaviour can be viewed as an optimization strategy in which individuals take advantage of the best of two worlds (Ramos 1990).

Acknowledgements

My studies have been supported by the Conselho Brasileiro de Desenvolvimento Científico e Tecnológico (CNPq), Brasília, Brazil. Financial support for field work and collection studies came from National Geographic Society (Grant no. 4964-93), Frank M. Chapman Memorial Fund, and the John D. and Catherine T. MacArthur Foundation. I thank the following people and institutions for data on specimens or for allowing me to examine the collections under their care: American Museum of Natural History (F. Vuilleumier and P. Sweet), National Museum of Natural History (R. Bierregaard), Field Museum of Natural History (D. Willard), Carnegie Museum of Natural History (K. C. Parkes), Museum of Zoology, University of Michigan (J. Hinshaw), Museu de História Natural Bernardino Rivadávia (J. R. Navas), Museu de História Natural Capão do Imbuia (F. Straube), Museu Nacional de História Natural, Bolívia (O. Rocha O.), Museum of Natural Science, Louisiana State University (J. V. Remsen, Jr.), Museu de Zoologia da Universidade de São Paulo (H. F. Camargo and P. E. Vanzolini), Museu Nacional, Rio de Janeiro (D. M. Teixeira and J. B. Nacinovic), Museu Paraense Emílio Goeldi (F. C. Novaes), Museu de História Natural A. Costa Lima (B. Rabelo), Museum Alexander Koenig (K. L. Schuchmann) and Zoological Museum, University of Copenhagen (J. Fjeldså). I thank J. Fjeldså, J. V. Remsen Jr. and D. W. Snow for their comments on early drafts. I am deeply indebted to G. F. Mees (Rijksmuseum van Naturlijke Historie, Leiden) for sharing with me his field notes and all

his correspondence with the late P. Schwartz about the *S. lineola-bouvronides* complex. I dedicate this paper to him, for his important contributions to Neotropical ornithology and ichthyology.

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The origin and affinities of Berthelot's Pipit *Anthus bertheloti*

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Received 20 July 1993

The warm temperate eastern North Atlantic or Macaronesian islands support a number of endemic birds whose distinctive features may presumably either be the result of adaptation to the insular environment, or preserve characteristics of earlier forms of mainland species. Extreme examples are provided by the laurel pigeons *Columba junoniae, C. bolli* and *C. trocaz* of the Canaries and Madeira, which might either be derived from one or more species that have been lost on the mainland, or a series of colonisations by the present Wood Pigeon *C. palumbus* (which once had a rather distinct race on Madeira) modified on the islands in different ways, or earlier forms of the Wood Pigeon which has undergone further development on the mainland.

Similarly, since another endemic species, Berthelot's Pipit *Anthus bertheloti*, has received little attention from zoogeographers such as Voous (1960) and Harrison (1982), I looked at them in search of evidence for their ancestry, concluding "while it usually appears to be assumed that they are descended from the Tawny Pipit *A. campestris*, presumably because of their pale colour and rather similar "chup" call note (I did not hear the song), they are actually closer in size to the Rock and Water Pipits *A. petrosus* and *A. spinoletta*, some of which also have a pale plumage, and moreover resemble Berthelot's Pipit in having the four longest primaries similar in length" (Bourne 1984). When I met the relevant editor of the *Birds of the Western Palearctic* I asked what he made of this, and he subsequently kindly shared the credit with me for a text that I never saw (Cramp 1988: 331).

This has now been challenged by Alström & Mild (1993), who repeat that Berthelot's Pipit appears to be an insular derivative of the Tawny Pipit. This does not really deal with the problem which concerned me, which was why it has evolved in the way that it has. Now that I have seen the song-flight of Berthelot's Pipit, while it seems indisputable that it must indeed be closely related to the Tawny Pipit, surely there is also at least one other species which appears allied to both, with an intermediate appearance, and similar tertials, behaviour (including the song) and habitat (arid rough ground from plains to mountain tops), so that surely it should also be included in the discussion? This is the Long-billed Pipit *A. similis*, with numerous races in the Middle East, Africa and India (details of all these birds will be found in Cramp 1988).

This transforms the situation, since it now not only becomes more debatable whether *A. bertheloti* is derived from *A. campestris*, but also whether one or both of these may be derived from *A. similis*, or vice versa, or whether they all arose independently from some common ancestor?

There are a limited number of possibilities. According to Olson (1985) the Passeriformes did not become numerous until about 10–20 million years ago in the Miocene. Kurtén (1968) has deduced that European mammal species and Brodkorb (1971) that bird species subsequently persisted for about three million years under the stable climate of the Pliocene, but a much shorter time during the climatic fluctuations of the Pleistocene. It also appears from the present distribution and variation of Palearctic birds (Vaurie 1959, 1965) that while the 10,000–15,000 years since the last glaciation may have sufficed for the development of many often highly distinct races, it has not been long enough for the emergence of many new species. Therefore there should have been time for the development of more than one, but not many, successive species in each modern genus, most of which appear to have originated in the Pliocene, since when the well-studied genus *Homo*, for example, appears to have had time to pass through a sequence of three species and three races (Wood 1994).

In discussing the evolution of *A. bertheloti* it is desirable to start by considering the whole genus *Anthus*, and its relation to its nearest allies. It seems likely that the first streaky, squeaky proto-pipit with cryptic plumage and a ventriloquial call rather similar to those of a young wagtail *Motacilla* originated in the Pliocene in some area of open ground which has now become difficult to locate owing to the subsequent wide dispersal of its descendants. One population, which I shall refer to as the Tundra Pipit, may have settled on the open ground then widespread in high northern latitudes, and started to migrate into lower latitudes in the winter to avoid the short northern days. Here it may have come into contact with another, more sedentary, population, referred to as the Desert Pipit, which had settled on the other large area of open ground, the subtropical deserts, with the result that they diverged in their form, ecology and behaviour. The marked fluctuations in climate during the Pleistocene may then have led to the development of many specialised local representatives of each form.

If we now consider the Western Palearctic pipits which I know best in particular, and ignore the probability that others have been lost, there are now three species or groups with a distribution implying further evolution within the area (as opposed to some other more highly migratory derivatives of the Tundra Pipit such as the Tree and Red-throated Pipits *A. trivialis* and *A. cervinus*, which may have originated in the area with severer winters further east). They comprise the widespread small, partially migratory Meadow Pipit *A. pratensis* of northern grassland; the more local medium-sized *spinoletta/petrosus* group which has now broken up (or been forcibly split!) into the pale southern montane Water Pipit and dark northern coastal Rock Pipit, which disperse in the winter; and the large, pale *campestris/similis* group in the Mediterranean area, which move south to be replaced by the Meadow and Water Pipits in the winter.

The simplest explanation for their evolution is surely that the complex Water Pipit group, which have a circumpolar range and still predominate on the periphery in North America, may be the most direct descendants of the hypothetical Tundra Pipit; the Meadow Pipit, with a very similar voice and display, may be an early derivative of this group which developed and came to replace it in the comparatively mild northwestern Palearctic grasslands during the Pleistocene; and the Rock Pipit is a later derivative which has occupied the rocky northern coasts left unoccupied by the Meadow Pipit during a late interglacial or even the postglacial period. Similarly, the Long-billed Pipit may be descended from the hypothetical Desert Pipit, while the Tawny Pipit may be an early derivative comparable to the Meadow Pipit in the Mediterranean area.

There are several possible explanations for the origin of Berthelot's Pipit. I originally wondered if it might be an ancient derivative of the widely-dispersed primeval Pliocene proto-pipit, but it hardly seemed distinct enough for such antiquity. Then I wondered if it might be a glacial relict derived from the Tundra Pipit. Now after seeing its song-flight I suggest that it is more likely to be an early derivative of the ancestral Desert Pipit, of roughly equal status to (and forming a superspecies with) the Tawny and Long-billed Pipits, which has diverged from the latter in the opposite direction to the Tawny Pipit, and converged with the pipits of similar habitats further north in its size, form and appearance. The fact that it still appears to be primarily a bird of low, arid terrain (though it now also frequents bare ground in the hills) suggests that like some other Macaronesian birds such as the Canary Chat *Saxicola dacotiae* it may be an early subtropical rather than a more recent glacial relict.

Acknowledgement

I am grateful to Dr Kees Roselaar for his helpful comments on this argument.

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The case history of an aberrant Black-throated Mango Hummingbird *Anthracothorax nigricollis*

by Victor C. Quesnel

Received 23 February 1994

Since 1985 the Black-throated Mango *Anthracothorax nigricollis*, one of the commonest Trinidad hummingbirds, has nested regularly in an open-sided greenhouse near Talparo, which has been used for the commercial production of tomatoes, and there have been as many as three nests in it at the same time. Thus, the nests and the birds are very familiar to me. On 22 May 1989 I discovered an empty nest in the greenhouse which on the following day had, to my surprise, a sitting bird that was to all appearances not the expected female but a male Black-throated Mango. (The sexes in this species are differently coloured and easily distinguished.) There was now one egg in the nest. A second egg was subsequently laid on some unrecorded date, probably 24 May. During the subsequent days this seemingly male bird was the only one seen incubating. No bird in female plumage ever approached the nest in my presence. On 9 June the first egg hatched, and at 16.00 hours on 11 June there was still one egg and one chick in the nest. At the same time the next day the nest was empty.

The main breeding season for hummingbirds in Trinidad is from December to June. Accordingly, in December 1989 I began a careful watch in the greenhouse in the expectation that the 'male' Black-throated Mango would be back again. I wanted to see if it would construct the nest or if it took over the incubation from the female after the eggs had been laid. On 14 February 1990 I found a nest with two chicks in a small greenhouse near by that was temporarily out of use. After I had been watching for some minutes a male-plumaged Black-throated Mango arrived at the nest and fed one of the chicks by regurgitation. It is highly unlikely that this bird was a different bird from the nesting 'male' bird of 1989 since true males are not known to feed the young in any hummingbird species.

Over the next nine days I watched this bird feed the chicks and I took several photographs. On 23 February both the chicks left the nest, and I watched the 'male' bird feed both of them, the younger only once, the older several times. During this time a bird in female plumage attempted to feed the older fledgling three times, seemingly without success. The young bird seemed reluctant to open its bill, and each time the 'male' quickly appeared and chased off the female. After this I did not see the young ones again.

Black-throated Mangoes use the same nest several times, but this nest had been damaged and would need repair before re-use. I kept watch to see if the 'male' would rebuild. On 16 March at 17.00 hours it was still unrepaired. At the same time the following day the nest was almost completely repaired. During 17 March the 'male' returned to the nest several times and engaged in building activity with movements identical to those I had seen females use. On 20 March there was one egg in the nest, which had been empty on the preceding day.

As a rule hummingbirds lay the second egg two days after the first. I was determined to see the laying of the second egg on 22 March. The 'male' was on the nest the night before, as is usual in this species since incubation begins as soon as the first egg is laid. I got up early on 22 March and was in position watching the nest at 05.35 hours when it was still dark enough for seeing to be difficult. The 'male' was on the nest. At exactly 06.00 hours the bird flew away and I immediately checked the nest. There was one egg. At 06.10 hours the bird returned, went to the nest for a few seconds, then after perching near by for two minutes returned to the nest and settled down. At about 06.16 hours I noticed that the bird appeared to be standing on the nest. It then thrust its bill into the nest three or four times and a minute later settled down again. I did not wait for the bird to leave but checked the nest again at 06.25 hours. There were two eggs in the nest. No bird in female plumage had visited the nest; the 'male' was a functional female. By 7 April both chicks had hatched, and by 1 May they had flown. Two more eggs were laid in the same nest, one on 12 May and the other on 14 May. One hatched on 29 May. Presumably the second hatched a day or two later but I have no more notes after that date.

This bird came back again in 1991, when she completed four different nests and attempted two others. She abandoned the first completed nest only two days after laying the second egg, abandoned the second nest on the 18th day following the laying of the second egg (the eggs seemingly being infertile), and abandoned the third nest two days after the laying of the second egg. From the fourth nest she successfully reared two chicks.

In 1992 she again raised two chicks and I saw her feeding the juveniles twice, on 27 February and again on 29 February, 14 and 16 days after the first chick had left the nest. After this, just when I decided that she would better serve science dead than alive and I resolved to capture her, she disappeared and never re-appeared.

Discussion

It is clear from the foregoing account that, despite the plumage, the bird was a functional female. Although hermaphrodites are known in some bird species (Terres 1982) the fact that female hummingbirds of both *Anthracothorax prevostii* and *Florisuga mellivora* in male plumage have been identified as female by dissection (F. G. Stiles pers. comm.) makes it probable that my bird was also female and not hermaphrodite. Be this as it may, the observations raise a number of fascinating questions. How did a male bird overcome its natural aggression towards another 'male' in order to mate with this female? If mating is unlikely, could this bird have stored sperm from one successful mating for more than one laying? Have the young of this bird been imprinted with male plumage as female plumage? Will the female young inherit their mother's male plumage?

Clearly, there are no certain answers to these questions. Presumably the 'male's' behaviour showed it to be female and overcame her mate's aggression. Terres (1982) cites a paper by Welty that reported on domestic hens laying fertile eggs "several months after mating". I think it unlikely that sperm could be stored for years and believe that mating would have taken place at least once in each breeding season. The observations record some strange behaviour in 1991, when two nests were abandoned shortly after the laying of the second egg and another abandoned on the 18th day of incubation because the eggs were seemingly infertile. (My records for the same species in the same greenhouse show an incubation period of 16 or 17 days depending on how it is measured and for which of the two eggs. For the aberrant female the incubation period was again 16 or 17 days, except on one occasion when, measuring from the date of finding the nest with one egg, the period was 15 days. If the first egg had been laid one day earlier the period would have been 16 days.) Is there a suggestion here that the aberrant female had laid these eggs in 1991 without mating?

To the third question the answer may be a tentative "yes". It may not be rare for female hummingbirds to feed young that are not their own. Skutch (1974) records that Helmut Wagner "saw strange females feed fledgling white-eared hummingbirds . . . Once he saw a green violet-ear feed young white-ears. In Ruschi's aviary a female planalto hermit adopted sixteen-day-old nestlings whose mother had died, attending them as though they were her own." Yet, as noted above, the older of two fledglings of the aberrant female refused to be fed by a normal female. I suggest that the reason is that the chick had been imprinted with male plumage.

To the fourth question my observations provide no answer, but an answer is not beyond obtaining in a similar case if the young could be placed in an aviary with their mother for a sufficiently long period. If the female young inherited male plumage they would face the same difficulties in mating as their mother presumably did. If, however, the female young were normally coloured but imprinted with male plumage a different problem would arise, for they might reject normal males and seek females as mates. Once again, I suppose, behaviour would override appearance and eventually bring the two sexes together for mating.

Acknowledgement

I thank Dr David Snow for reading the earlier drafts and making suggestions for the improvement of this paper.

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An additional record of the Pale-footed Swallow *Notiochelidon flavipes* from Venezuela

by Thomas P. Ryan & Miguel Lentino R.

Received 5 February 1994

The Pale-footed Swallow *Notiochelidon flavipes* is a poorly known South American hirundine species. It is thought to inhabit a narrow elevation range from 1550 m to 3600 m in the Andes from northern Bolivia to Mérida, Venezuela (Meyer de Schauensee 1970, Parker & O'Neill 1980, Parker *et al.* 1980, Lentino 1988, Turner 1989, S. Hilty pers comm. 1993). Despite its extensive range, it is currently known from few museum specimens and few field sightings. We report here the second specimen of the species from Venezuela. This specimen shows a northward extension of its current known range, and that this species has been present in Venezuela since at least 1951.

The specimen reported here is number EBRG-1656, in the Museo de la Estación Biológica de Rancho Grande, Servicio Autónomo de Fauna del Ministerio del Ambiente, El Limón, Aragua, Venezuela. It was collected in 1951 by Ernst Schäfer at an elevation of 2300 m in Páramo La Cristalina 9 km northwest of Boconó, Trujillo (9°19′N, 70°20′W), and was originally identified as an "extreme individual variant" juvenile Blue-and-white Swallow *N. cyanoleuca* (Colección Ornitológica Phelps, Caracas, communication). We have re-identified it as a Pale-footed Swallow on the basis of plumage and size. The specimen has: a large pale rufous-brown patch covering the entire throat, brown cheeks, brown sides of the body, white central breast and abdomen, dark brown under tail coverts, pale yellow feet. The crown, nape, side of the head (down to the eyes), and back are blue-black with several glossy blue feathers. Although the specimen is in excellent condition, it should be noted that this is an old specimen and some foxing may have occurred. A comparison of the body measurements of the two species shows the specimen to be smaller than the similar Blue-and-white Swallow. The measurements are as follows: length (bill to tail) 95 mm, wing length 83 mm, tail length 28 mm. The wings extend beyond the tail and the tail is very slightly forked. Typical body measurements for the Blue-and-white Swallow are: length 120 mm, wing 88–102 mm (mean 94.2), tail 42–55 mm (mean 49.7) (Turner 1989). With the same equipment used in measuring the Pale-footed Swallow, the average body length of seven Blue-and-white Swallows housed in the Rancho Grande Collection is 117 mm.

This is only the second specimen to be taken in Venezuela and the 17th specimen in museums worldwide. The species was first observed in Venezuela in August 1985 in the city of Mérida in the state of Mérida, and the first specimen was obtained in December 1985 by Miguel Lentino R. in Betania, Páramo de Tamá, Táchira (Lentino 1988). There has been much speculation that this species may have occurred in Venezuela previous to these records and was mis-identified in the field as the more common Blue-and-white Swallow (Lentino 1988, Parker & O'Neill 1980, Turner 1989). The 1951 specimen confirms that possibility. It is the first to be collected in the state of Trujillo, and represents a northern extension of this species' range of approximately 140 km.

Both professional and amateur ornithologists should be alert to the possibility of this bird's presence and look more closely at small blue and white swallows seen in open areas of primary forest above 1550 m (Lentino 1988, Parker & O'Neill 1980). All additional observations are sure to significantly augment our meagre understanding of the distribution and ecology of this swallow.

Acknowledgements

We are grateful to the Government of Venezuela, and INPARQUES for permission to study in Venezuela; to Museo de la Estación Biológica de Rancho Grande, of Servicio Autónomo de Fauna del Ministerio del Ambiente and Colección Ornitólogica Phelps, Caracas for providing access to their Collections; to Pomona Valley Audubon Society and the Frank M. Chapman Memorial Fund of the American Museum of Natural History for generous financial support; to Universidad Central de Venezuela, Maracay, Sociedad Científica Amigos del Parque Nacional Henri Pittier and Sociedad Conservacionista Audubon de Venezuela for their help and use of their facilities; to Dr. Ernesto Fernández B., Dr. Alberto Fernández B. and their families for their help and hospitality; to Steve Hilty for providing additional sight records and advice; and to Dr. Charles T. Collins for his helpful advice in preparing this manuscript.

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Additional records of and notes on the Unicoloured Thrush *Turdus haplochrous*, a little known Bolivian endemic

by Adam G. White, Robin C. Brace & Anthony J. Payne

Received 20 January 1994

The Unicoloured Thrush *Turdus haplochrous* is an enigmatic species, known previously from only six specimens and one sight record relating to four localities in the lowlands of Bolivia, and is regarded consequently as an ICBP/IUCN Red Data Book species (Collar *et al.* 1992). The type locality is Palmarito (16°49′S, 62°37′W), Rio San Julián, Chiquitos province in Santa Cruz department, where a male and female (adults) were secured by Franz Steinbach in 1918 (Todd 1931, O'Neill 1976). Steinbach collected two further birds (both male) in 1944, from along the Río Mamoré, Marbán Province, in Beni, some 250–275 km northwest of Palmarito (O'Neill 1976). The remaining two specimens (male and female) were obtained in 1984 from open woodland 7 km southeast of Trinidad (also Beni) by C. G. Schmitt, who succeeded in recording calls (see Hardy & Parker 1985) of these or other individuals that were seen. The sight record refers to one bird observed and tape-recorded by T. A. Parker in September 1989 in semi-deciduous woodland near La Junta, located between Santa Rosa de la Roca and Florida just outside the Noell Kempff Mercado National Park (Santa Cruz) (J. M. Bates, pers. comm.). We report here on new records of this species, which was observed, and one individual trapped, during the course of survey work (White *et al.* 1993) in the Estación Biológica del Beni (EBB), Beni (Miranda 1991), the headquarters of which lie 180 km to the west of Trinidad.

All the records were obtained in a small area, no more than 2 × 1 km in extent, of seasonally flooded riverine forest (*várzea*) bordering the south bank of the Río Manique, approximately 70 km northeast of San Borja (14°25′S, 66°15′W; *c.* 200 m altitude). The understory consisted of 5–7 m tall trees, but in places the forest was quite open and consequently the undergrowth well developed; there were few trees whose height exceeded 30 m. *T. haplochrous* was observed in the uppermost branches of the youngest trees, but was trapped in dense undergrowth (3–4 m in height). On 7 September, three thrushes were watched chasing each other, one of which was identified conclusively as *T. haplochrous*. In the evening, 1.5 km away, one individual (sex not determined) was trapped; it was held overnight and then released. Further sightings were obtained on 10 and 16 September (one and two birds respectively). In the area where *T. haplochrous* was recorded, Hauxwell's Thrush *T. hauxwelli* occurred also and was apparently more numerous, 10–20 individuals being seen in the upper branches of young trees and seven individuals trapped in mist-nets where the single *T. haplochrous* was taken. A third member of the genus, the Creamy-bellied Thrush *T. amaurochalinus*, which is widely distributed in Beni, was relatively abundant, but this species is sufficiently distinct in the field and thus presented no additional difficulties in species separation.

Description highlighting differences from T. hauxwelli

The following points were noted, serving to distinguish *T. haplochrous* from the rather similar and sympatric *T. hauxwelli* (Ridgely & Tudor 1989), whose song is similar (Hardy & Parker 1985). Upperparts olive-brown and underparts uniformly sandy-brown, both darker (especially the remiges and rectrices) than in *T. hauxwelli*, which is more rufescent above; an orange tint, however, was apparent on the underwing coverts. The inner margins of the remiges exhibited no contrast; in *T. hauxwelli* they are buffy-white (Todd 1931). The pale underparts of *T. hauxwelli* are given as a distinguishing feature by Ridgely & Tudor (1989), who comment, however, that the whitish lower belly and undertail coverts may occasionally be washed with buff. Indeed, several *T. hauxwelli* that we examined showed relatively little white below. The undertail coverts of *T. haplochrous* displayed narrow light brown margins; the feathers immediately surrounding the vent were cream-coloured. The sandy-brown streaking on the creamy throat was far less conspicuous than in *T. hauxwelli*. The eye was enclosed by a complete, but narrow, dull orange eye-ring and had a brownish-red iris. The bill was olive-yellow, with the base of the upper mandible darker and more manifestly olive in tone; the tarsi and toes were brown and the claws grey. By contrast, *T. hauxwelli* differed in having a more obviously demarcated pale throat, a dark brown bill, a bright red iris, and no noticeable eye-ring. Additionally, the head of that species appeared smaller and was obviously less rounded in outline. Consequently, little trouble was experienced with the separation of these two species in the hand, but positive field identification was less straightforward since bill colour and, especially, the existence of an eye-ring, were not easily discerned. Other species similar to *T. haplochrous* are the Cocoa Thrush *T. fumigatus*, which is generally more rufescent than *T. hauxwelli* (Snow 1985, Ridgely & Tudor 1989), occurs widely in Brazil and has been recorded questionably from Santa Cruz department, and the Clay-coloured Thrush *T. grayi* of northern Colombia and central America, which is lighter in colour (personal examination of skins).

The holotype of *T. haplochrous*, an adult female, held in the Carnegie Museum of Natural History (CM 80224), was described by Todd (1931) as having a brown iris and brownish-black bill. K. C. Parkes (pers. comm.) has informed us that the male (CM 119459), obtained by Steinbach at the same time as the holotype, displays identical hues. With regard to the two males (LSUMZ 36465 and 38084) collected by Steinbach in 1944, O'Neill (1976) comments simply that they did not differ significantly from the aforementioned pair. These descriptions of skins give no hint of the bill of *T. haplochrous* exhibiting olive tones, but in agreement with our observations, notes provided by C. G. Schmitt (pers. comm.) indicate that the distal portions of both upper and lower mandibles of both the male and female obtained near Trinidad displayed a lime-green hue, which characterizes the bill of *T. grayi* too. The base of the upper mandible of the female (held in the Louisiana State University Museum of Zoology; LSUMZ 124796) is described as brownish-olive, whilst that of the lower mandible is given as medium neutral grey in colour; the bill base of the male (LSUMZ 125992) is reported as being fuscous. In the light of these details, it is tempting to speculate that the individual which we trapped was a male, and that both birds acquired by Steinbach in 1918 were not fully mature. Schmitt's notes indicate too that whilst the tarsi and toes of the female concerned were hair brown, those of the male were glaucous in colour. Obviously, it will be necessary to obtain additional information on bare part colorations before definitive descriptions can be given. Nevertheless, if a *Turdus* sp. showing predominantly brownish upper- and underparts, and an olive-yellow bill, is seen in lowland Bolivia, it should be *T. haplochrous*, although it needs to be cautioned that Snow (1985) has reported that the bill tips of some dried skins of '*hauxwelli*-type' thrushes appear greenish.

Measurements (mm) and weight (g) of individual trapped

Wing 124; tail 100; bill (tip to feathers) 17.4; skull 50.5 (to bill tip); tarsus 32. Lengths of primaries (all new) in relation to longest, numbered from inside: p 10 −66 (+8 primary coverts); p 9 −15; p 8 −5; p 7 −1.5; p 6 wing point; p 5 −1.5; p 4 −7; p 3 −12; p 2 −16; p 1 −21. Emarginations (from tip): p 8 48; p 7 40; p 6 36; p 5 30. Slight notching on p 9, p 8 and p 7. Weight 84.

Range extension and conservation implications

Despite there being two other known localities for *T. haplochrous* in Beni, the finding of this species in the EBB represents a range extension (to the north-west) of no less than 150 km. Since the species is fairly cryptic and easily confused with *T. hauxwelli*, it is likely that it has been overlooked previously and that further localities will be discovered in due course. Within the confines of the EBB there are no obvious threats posed to the *várzea* forest in which the species was found. It seems that other than the preservation of such riverine forest, which occurs widely in the lowlands of Bolivia, active conservation measures may not be required urgently at the present time. Further information is required, however, to determine the distribution and habitat requirements of this elusive species more fully.

Acknowledgements

These observations were made during the course of survey work undertaken by the 'Nottingham University Bolivia Project 1992' expeditionary team based at the EBB from July to October 1992, whose complement included also Giles E. Duffield, Alan J. Hesse and Steven Spick. We wish to thank especially BirdLife International for support through the auspices of their Conservation Awards Scheme, which was made possible by financial backing from British Petroleum, to whom we are most gratefully indebted. We acknowledge the logistical support and advice supplied by Gary Allport, Jonathon Eames, Martin Kelsey and other staff at BirdLife International. Financial support was secured also from the following bodies: Adrian Ashby-Smith Memorial Fund, British Museum of Natural History (Bird Exploration Fund), British Ecological Society, British Ornithologists' Union, Conder Conservation Trust, Institute of Biology, Mirror Group Newspapers, People's Trust for Endangered Species, Pneumatic Services Ltd. (London), Rayne Foundation, Royal Geographical Society, World Pheasant Association. We are very grateful for the constant help and encouragement given by the staff of the EBB, especially Carmen Miranda (Director) and Sabina Stab (Resident Scientific Coordinator). We acknowledge too advice provided by Stuart Strahl (New York Zoological Society), and help from Michael Walters and Peter Colston of the British Museum (Natural History), Tring, where skins of *T. grayi* were examined. C. Gregory Schmitt permitted us to peruse detailed descriptions relating to the sightings and specimens of *T. haplochrous* obtained near Trinidad, Kenneth C. Parkes provided us with comprehensive details and background information pertaining to the two CM specimens, John P. O'Neill supplied information on the LSUMZ specimens trapped by Steinbach, and John M. Bates (American Museum of Natural History, New York) provided us with details of

the sighting made by the late Theodore A. Parker III: we record our thanks to these people for their most helpful responses to our enquiries.

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Distribution of Blue Crowned Pigeon *Goura cristata* on north Seram

by Alastair A. Macdonald

Received 24 January 1994

The Blue Crowned Pigeon *Goura cristata* recently reported from Seram by Kitchener *et al*. (1993) had been stumbled across in a village near the coast. Two years later (August 1993) the author returned to the island to carry out a more systematic investigation of its distribution in the north-central part of Seram. It is pertinent to note that the author was returning to people in villages whom he knew and had visited during previous field trips in 1987, 1990 and 1991 (Edwards *et al*. 1993). Information concerning the wider distribution of *Goura* has recently been published by King & Nijboer (1994).

Coloured photographic prints of the Blue Crowned Pigeon were shown to residents, shopkeepers, forestry guards (PHPA) and logging company personnel from the city of Ambon, and villages on the coast and in the interior of north-central Seram (Fig. 1). The respondents were asked if they recognised the bird, to indicate where they thought it came from, then asked if the bird was present on Seram and where it might be found on the island.

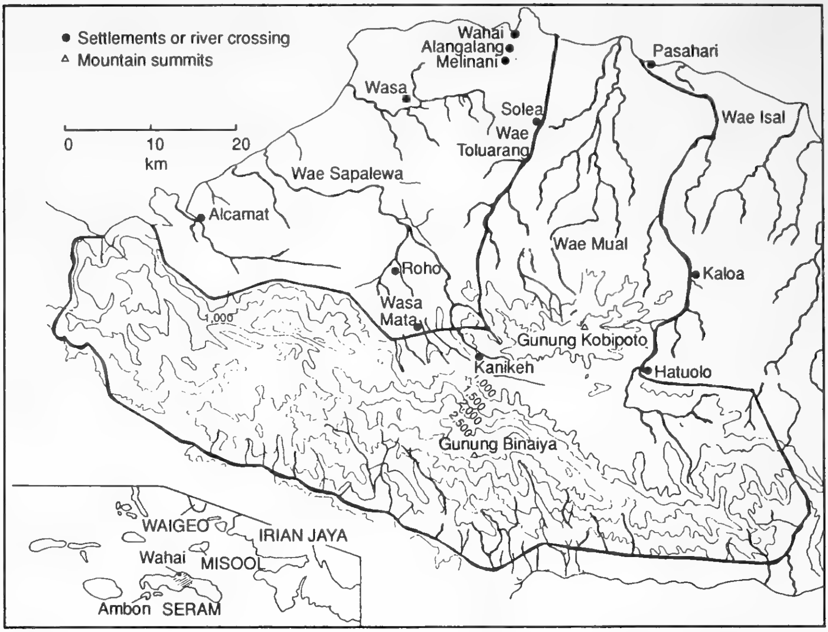

Figure 1. Map of Manusela National Park indicating the rivers of the Mual plains and the location of the villages and the river crossing mentioned in the text. The insert places Seram in relation to Ambon and Irian Jaya.

Those who lived in the city of Ambon or who, like shopkeepers and fishermen, lived solely in villages on the north coast of Seram either failed to recognise the bird or used the non-specific name *mambruk* reported by Kitchener *et al.* (1993) and indicated that it came from Irian Jaya; several mentioned that it was sometimes received as a gift from relatives living in that region; it was not infrequently shipped to Ambon. One bird was reportedly seen being loaded onto a boat from Labuan Pulau Tujuh, a small island to the west of Seram. Forest guards reported that Bula island (east Seram) has many crowned pigeons.

Villagers living in the interior of north-central Seram, particularly the hunters and forest guards from Alangalang, Melinani, Wasa, Roho, Kanikeh, Air Besar, Solea and Pasahari, recognised the birds as living in the forest. They were described as being seen sometimes in pairs or in two pairs and often being heard flying from the ground into the trees; hunters vocally mimicked the *whu-whu-whu-whu* sound of the wings beating which they said was loud, obvious and characteristic; the bird could be found throughout the lowland forest of the Mual plains, bordering the tributaries of the Wae (river) Sapalewa, Wai Toluarang, Wae Mual and Wai Isal (Fig. 1). The people in this region called the Blue Crowned Pigeon *lia nua* or *lia nue* in the Nusaweli language. Hunters in Wasa reported that they could be found as far inland as the

Wasa Mata crossing (*c*. 350 m). Villagers from Kanikeh concurred; they were not found in the higher countryside towards their village (*c*. 850 m). Hunters from Solea indicated that they were found in the lowland forests around Kaloa and Hatuolo. The bird was referred to as 'clever' because they found it difficult to catch with local traps. It was therefore not actively hunted for food. It was recognised to be attractive, but only survived one or two weeks of captivity in the forest, in contrast to the longer survival times of lories (*Eos bornea, E. semilarvata*), lorikeets (*Trichoglossus haematodus*) and cockatoos (*Cacatua moluccensis*).

The survey demonstrated a wide recognition of the presence of the bird throughout the low central part of Seram north of the mountain ridges of Gunung Kobipoto and Gunung Binaiya. Contrary to what is implied in our earlier paper (Kitchener *et al*. 1993), we now think it probable that, like the Cassowary *Casuarius casuarius*, the bird was brought to the island by man (White 1975), although it is not clear from this survey how long ago this first occurred. However, the discovery of the existence of a name for the bird in (at least) one of the languages of the island may argue in favour of its presence on the island for a considerable period.

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The genera of owls in the Asioninae

by Storrs L. Olson

Received 11 March 1994

The cosmopolitan genus *Asio* Brisson, 1760, contains six or seven species, with greatest diversity in the Old World. Three nominal monotypic genera are closely associated with *Asio* and the four together have been regarded as constituting a subfamily Asioninae (e.g. Ford 1967). An additional character that unites all the asionine owls that was not mentioned by Ford is the very long, slender zygomatic process (Olson & James 1991—not ascertainable in *Nesasio*).

The other genera in question are: *Pseudoscops* Kaup, 1848, of Jamaica; *Rhinoptynx* Kaup, 1851, of the Neotropics; and *Nesasio* Peters, 1937, of the Solomon Islands. Some authors merge *Rhinoptynx* with *Asio* (e.g. A.O.U. 1983). Ford (1967) examined and described the cranial osteology of these owls reasonably accurately, although he had only X-radiographs of skin specimens for comparison of *Nesasio*. He suggested combining all asionine genera under *Asio*, but I believe that this is misleading and unnecessarily minimises the differences between *Asio* and *Pseudoscops*/*Rhinoptynx*.

The species of *Asio* have a very distinctive cranial morphology (*A. otus*, *A. flammeus*, and *A. capensis* examined) owing primarily to the large, semi-vertical, flattened surfaces of the cranium above and behind the orbits (Fig. 1C,D). In dorsal view this gives the skull a decidedly triangular appearance. The flattened areas terminate posteriorly in a lateral prominence over the auditory bulla that lies well posterior to the origin of the postorbital process, which descends from the anterior margin of the flattened surface. In *Pseudoscops* and *Rhinoptynx*, the flattened areas are much smaller, so that the lateral prominence is more anteriad, with the postorbital process descending directly from it (Fig. 1A,B). The skulls in dorsal view in consequence have a more rounded than triangular appearance.

The tympanic wing in *Asio* is enlarged relative to that in *Pseudoscops*/*Rhinoptynx*, so that in posterior view it appears more rounded, and in anterior view it extends much farther dorsally and laterally beyond the postorbital process. In lateral view the recess above the quadrate, between the postorbital process and the tympanic wing, is much wider and deeper in *Asio*.

There are minor differences between *Pseudoscops* and *Rhinoptynx*, mostly related to the smaller size of the flattened supraorbital surface, which makes the lateral prominence less expanded, so the skull appears narrower in *Pseudoscops*. Also, the supraorbital processes are smaller and blunter in *Pseudoscops*.

Nesasio solomonensis was originally described in the genus *Pseudoptynx*, which is now considered a synonym of *Bubo*. Peters (1937) showed that the structure of its external ear was not bubonine, for which reason he created the genus *Nesasio*, which he regarded as related to *Asio*. I was able to study a skull and limb bones removed from a skin of *Nesasio*. Unfortunately, the skull was heavily damaged during the original preparation of the skin, but it still preserves some diagnostic features.

Compared to a bubonine (*Ketupa ketupu*, Fig. 2), the skull is low and narrow, much more triangular, with the supraorbital flattened area present and well developed, giving the skull a triangular appearance. There is also a marked furrow between the cerebral hemispheres, such as may be developed in *Asio* and to a lesser extent in *Pseudoscops* and *Rhinoptynx*. The skull of *Nesasio* is thus clearly asionine and is more like that of *Asio* than are either *Pseudoscops* or *Rhinoptynx*. It differs from *Asio*, however, in having the postorbital process descending directly from the postorbital prominence, as in *Pseudoscops*/*Rhinoptynx*. Also, the recess above the quadrate does not appear to be as wide and

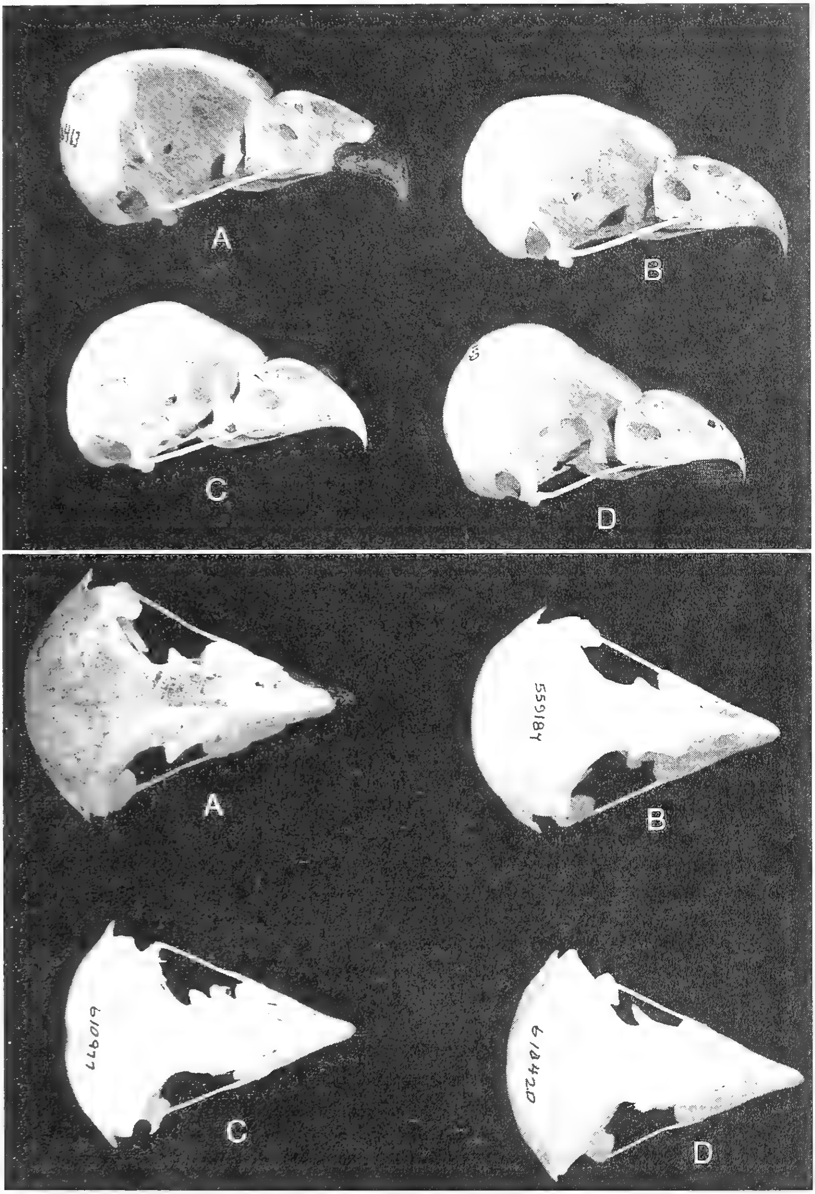

Figure 1. Lateral (above) and dorsal (below) view of skulls of asionine owls: A, *Rhinoptynx clamator* (LSU 86463), the beak still has the dark rhamphotheca adhering; B, *Pseudoscops grammicus* (USNM 559184); C, *Asio flammeus* (USNM 610977); D, *Asio otus* (USNM 610420).

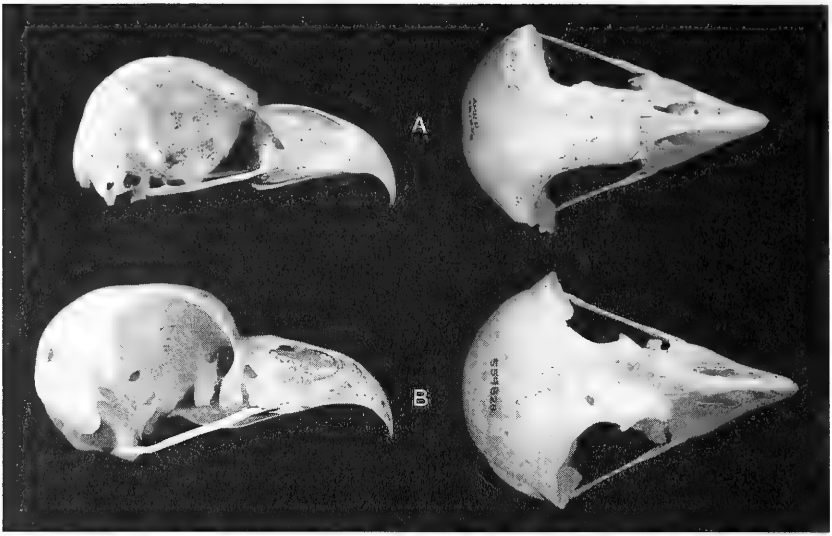

Figure 2. Lateral (left) and dorsal (right) views of skulls: A, *Nesasio solomonensis* (AMNH 631734); B, *Ketupa ketupu* (USNM 559828).

deep as in *Asio* and would again be more similar to *Pseudoscops/Rhinoptynx*. The proportions of the foot differ greatly in *Nesasio*. Although the tarsometatarsus is scarcely longer than that in *Rhinoptynx* (Fig. 3), it is much more massive, so that *Nesasio* must be a much more powerful predator that feeds on relatively larger prey.

Peters (1937:82) considered *Nesasio* to be "probably derived from an offshoot of *Asio flammeus* stock," whereas *Pseudoscops* he regarded as being "originally of *A. asio* stock." I do not think that this is an accurate reflection of the probable evolutionary history of this group of owls. By comparison with the remainder of the Strigidae, the characters of skull are most derived in *Asio*. *Pseudoscops* and *Rhinoptynx* are clearly more primitive than *Asio* and are much more similar to one another than either is to *Asio*. The differences in the skulls of these two are relatively minor and probably not of generic significance. I therefore consider the junior name *Rhinoptynx* to be a synonym of *Pseudoscops*, and its only contained species, the Striped Owl, should now be known as *Pseudoscops clamator*. *Nesasio* appears more derived in the extent of the supraorbital flattened surfaces and more triangular shape of the skull, but is less derived than *Asio* in this respect and retains the primitive characters mentioned above, as well as having a more specialized tarsal morphology.

Thus, rather than the insular forms *Pseudoscops grammicus* and *Nesasio solomonensis* being derived from *Asio*, these species, along with *P. clamator*, can be viewed more as primitive forms, perhaps relicts of an earlier asionine radiation that has otherwise been replaced by species of the more derived genus *Asio* in most parts of the world.

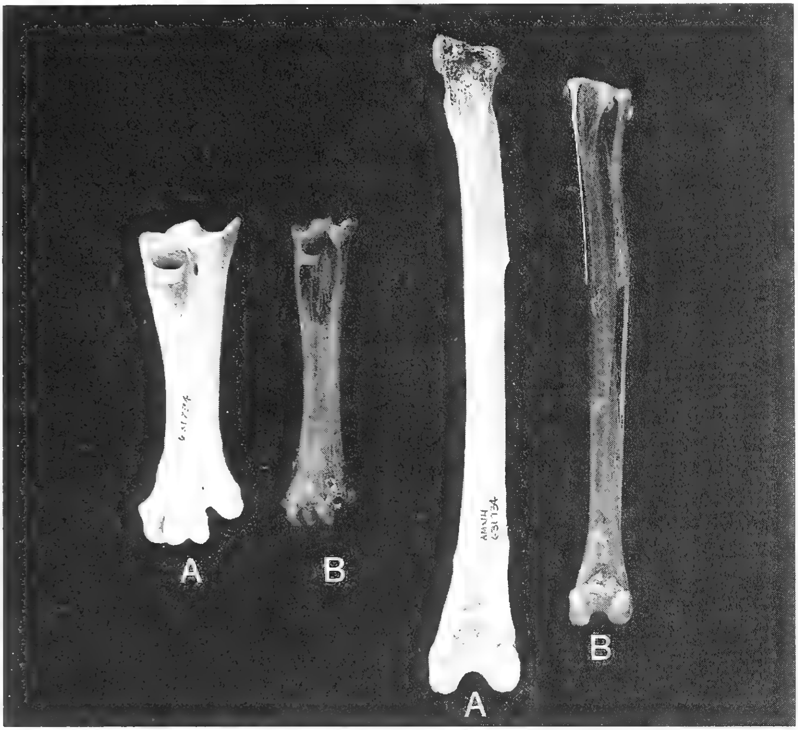

Figure 3. Anterior views of the tarsometatarsus (left) and tibiotarsus (right) of: A, *Nesasio solomonensis* (AMNH 631734); B, *Rhinoptynx clamator* (LSU 86463).

Acknowledgements

I thank George Barrowclough (American Museum of Natural History, New York) for permitting bones to be removed from a study skin of *Nesasio solomonensis*, and J. P. Angle and F. V. Grady for undertaking this task. J. V. Remsen (Louisiana State University Museum of Natural History, Baton Rouge) kindly lent a skeleton of *Rhinoptynx clamator*. Other comparative material was from the collections of the National Museum of Natural History, Smithsonian Institution. The photographs are by Victor E. Krantz.

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Repeated sightings and first capture of a live Madagascar Serpent-eagle *Eutriorchis astur*

by R. Thorstrom, R. T. Watson, B. Damary, F. Toto, M. Baba & V. Baba

Received 5 April 1994

The Madagascar Serpent-eagle *Eutriorchis astur* is considered one of the rarest birds of prey in the world (Langrand & Meyburg 1984). Until recently it was known from only eleven museum specimens (Ferguson-Lees *et al*. in press), the last of which were collected in 1930 (Dee 1986). Raxworthy & Colston (1992) identified *Eutriorchis astur* from a skull and three primary feathers collected from a decomposed carcass found in Ambatovaky Reserve (16°51′S, 49°08′E). There have been several possible sight records in recent decades from Marojejy Reserve (14°21′S, 49°38′E), including a detailed account of a sighting made in 1988 by Sheldon & Duckworth (1990).

The Peregrine Fund began ecological studies focused on raptors on Masoala Peninsula, Madagascar in August 1991 (Watson & Lewis in press). Studies have involved fourteen people in the field for about 140 person-months, as follows: two field seasons (September through February) studying the Madagascar Buzzard *Buteo brachypterus* (Berkelman 1993), two seasons testing raptor survey techniques (René de Roland & Watson 1993), two seasons of a nest reward program among local villagers (Borge 1993), one season of avian community studies (Watson & Strzalkowska 1993), and one season of peninsula-wide avian inventory (Thorstrom 1994) as well as winter season (approximately March through August) studies on other taxa.

During a bird inventory of Masoala Peninsula conducted by RT from 1 September 1993 to 28 February 1994, RT and colleagues sighted Madagascar Serpent-eagles four times and captured the species once. On 2 November 1993, RT sighted a Madagascar Serpent-eagle for the first time on Masoala Peninsula at Sarahandrano/Ambanivony (15°17′S, 50°17′E) at 50 m elevation. The species was sighted again on 2 November by RT and BD, and on 11 November by VB at the same locality on the east side of the peninsula. Then on 14 January 1994, FT and MB captured a Madagascar Serpent-eagle in a mist-net on the west side of the peninsula, about 60 km from the November 1993 sightings. On 27 January 1994, DB flushed a Madagascar Serpent-eagle at Antafononona (15°43′S, 50°10′E) at 230 m elevation, 30 km east of the January capture site.

Description of sightings on east side of peninsula

At 05.40 h on 2 November RT heard an unfamiliar vocalization, a three-note coua-like (*Coua caerulea* or *C. serriana*) or frog-like call, a nasal *waah–waah–waah* that was repeated. RT observed a large raptor fly and perch in the vicinity of the unknown call. The bird was observed with 10 × binoculars at a distance of 30 m as it perched about

20 m above the ground. The first apparent characteristic was the bright yellow iris. Other observable characteristics included: large and long eagle-like head; bill dark grey/black, upper mandible large; no noticeable cere colour; white-edged feathering on darker crown and nape presenting a scalloped appearance; no distinct white supercilium (present in the Henst's Goshawk *Accipiter henstii*); medium brown colour on back; underparts of breast and belly white with fairly broad dark brown bars that thinned out towards lower belly and flanks. Brown bars were fairly widely spaced and spacing increased toward belly and flanks. Upper tarsi were yellowish; tail long in proportion to body with, on dorsal side, broad dark-brown tail bands, narrow dark-brown terminal band, separated by lighter bands of approximately equal width. The bird was observed for 45 seconds moving its head and scanning the middle to lower canopy. It then walked 0.5 m along the limb and flew lethargically across a ravine disappearing into a large vine tangle approximately 40 m away.

On the same day at 11.30 h RT and DB flushed a large raptor that was perched along a trail, 25 m up slope from the previous sighting. The bird had the same characteristics as the above description. It flew down the trail flapping slowly and landed on a branch 15 m above ground; then hopped 0.5 m onto an epiphytic plant attached to the side of a tree, and proceeded to walk and thrust a foot into the epiphytic plant, apparently trying to flush prey. After 20 seconds of walking and foot-thrusting, the bird hopped 1 m up to a branch, walked along the branch and then flew out of view. RT and BD relocated the serpent-eagle perched 30 m away in clear view for a further 15 sec. The tarsus length and thickness were similar to a Henst's Goshawk. The feathers on the nape were longer than other head feathers, giving an elongated appearance to the head.

On 11 November 1993 at 16.00 h, while at camp, VB was alerted by alarm calls of Broad-billed Rollers *Eurystomus glaucurus*, a Madagascar Kestrel *Falco newtoni*, and Crested Drongos *Dicrurus forficatus*. They were mobbing a Madagascar Serpent-eagle, with the same characteristics as the earlier description, perched 25 m above ground in a large tree (*Canarium* sp.) situated on the edge of a rice paddy. The serpent-eagle remained motionless while being attacked by the smaller birds. It moved once to another branch during 30 minutes of observation; then flew, rolled over to defend itself against a stooping Madagascar Kestrel, and disappeared into the forest at canopy level.

We returned to Sarahandrano/Ambanivony from 28 November to 17 December 1993, to capture for radio-tagging and begin studying this serpent-eagle. During this period tavy (slash-and-burn agriculture) activity had increased in the area where we had observed it. We searched, placed traps baited with chicken on the ground and in the trees at the serpent-eagle sighting sites, and asked local people if they knew of any nest locations of this bird. Two nests were reported to us which we identified as nests of a Henst's Goshawk and a Bat Hawk *Machaeramphus alcinus*. The serpent-eagle was not relocated.

On 27 January 1994 at 07.14 h, BD flushed a Madagascar Serpent-eagle that was perched 1 m above the ground along a trail. It flew to small tree 15 m away and was observed for 15 minutes. As it flew BD noticed that some tail feathers were worn and broken. The bird had the same characteristics as the previous descriptions; larger than the Madagascar Buzzard; brown colour; brilliant yellow iris; barring on breast and belly broader and separated more than Henst's Goshawk. The bird flew again and perched 20 m above ground in a large tree where it was mobbed by a Crested Drongo, a Rufous Vanga *Schetba rufa*, and two Madagascar Bulbuls *Hypsipetes madagascariensis*. After perching for 10 minutes it called twice *waa–waa–waa–waa–wa-wa-wa*, then flew out of sight.

Description of capture on west side of peninsula

A Madagascar Serpent-eagle was captured in a mist net on the west coast of Masoala Peninsula *c.* 250 m east of The Peregrine Fund's Andranobe Field Station (AFS) (15°40′S, 49°50′E). AFS is about 6 km south of the village of Ambanizana on the creek known locally as Andranobe but marked on the map (FTM X-39/Ambanizana) as Lohatrozo. The Andranobe drainage supports minimally disturbed primary forest from sea level to 700 m. The trap site was at an elevation of 90 m, about 200 m from the sea and 10 minutes walk from AFS. The nearest tavy, 500 m east of the trap site, was used in 1992, but not active in 1993. The nearest active tavy was 700 m south.

The bird was captured at 07.42 h on 14 January 1994, in the bottom pocket of one of ten mist-nets. The nest (7 × 2 m, mesh size 30 mm) had been set on that day since 04.30 h, at ground level, below the forest canopy. The locality was on a ridge within 200 m of Andranobe River. At the time of capture we had completed 35 days of mist-netting (2650 net-hours) between 04.30 h and 17.00 h since September 1993. The bird was removed from the net, measured, weighed, banded, and photographed; then released after attaching a radio-telemetry transmitter (weight 6 g, Holohil Inc., Ontario, Canada) to its back.

Specimen description

The bird was identified in the field by FT and MB as *Eutriorchis astur* (Fandrasalambo in the local Betsimisaraka language) using the *Guide to the Birds of Madagascar* (Langrand 1990) and photographs of *Eutriorchis astur* museum skins. The identity was later verified from photographs taken of the bird in the hand (Fig. 1).

The following measurements were taken: weight 770 g, bill length 30.9 mm, wing length 430 mm, tail length 296 mm, body length 560 mm, tarsus length 79 mm, inside toe length 49 mm, inside talon length 21.5 mm. The iris was bright yellow, bill dark grey/black, legs and toes yellow, talons black.

Diagnostic features included small (about 5 mm diameter), vertically elongated hexagonal multiple scalation on the tarsus (contrary to Henst's Goshawk which has horizontally banded scalation on the tarsus); very long tail, with broad white bands on the under side between narrower brown bands; 'heavy' build to head, and bulging

Figure 1. Madagascar Serpent-eagle captured 14 January 1994 on Masoala Peninsula, Madagascar. The bird was released after weighing, measuring and attaching a radio-tag.

upper bill giving a 'Roman nose' look; and elongated feathers of nape. On release the bird was placed on the ground where it walked several steps then flew out of view.

Discussion

The Madagascar Serpent-eagle is evidently secretive and difficult to detect. Despite our focus on raptor studies and the considerable time and effort invested in the field by our biologists since we began studies on Masoala Peninsula, the first sighting was only made after about 100 person months of effort. The first capture was made accidentally, very close to our field station at the centre of much of our field work. Now for the first time we are in a position to learn about the behaviour and biology of the Madagascar Serpent-eagle. With a better understanding of its behaviour we may be able to detect the species more readily. With this ability we aim to begin studies of its distribution and abundance and factors affecting them.

Preserving the Madagascar Serpent-eagle and its rain forest habitat remains one of the biggest challenges to conservationists working in Madagascar. The most effective conservation measure must be to protect extensive areas of primary forest within its known range (between latitudes 14° and 19°S). Although much activity is centred on this aim, there remains significant concern that continued forest loss and habitat fragmentation will reduce available habitat to below the critical minimum. Understanding the species' spatial requirements and the effects of forest fragmentation on nesting density will help us determine minimum areas required for viable populations of this species.

All previous records of this species were in minimally disturbed primary forest. While the site of the eagle's capture conforms to this pattern, the three sightings made in November 1993 (probably of the same bird) were in forest within 100 m of tavy activity. The fourth sighting was in undisturbed primary forest 3 km from the last tavy up the Anoavandrano River drainage.

Since inception of The Peregrine Fund's studies on Masoala in 1991 we have had a policy of accommodating only authorized project participants in the study area and at the field station in order to minimize researcher impact on the undisturbed forest. This policy will continue.

Acknowledgements

We would like to thank the Direction des Eaux et Forêts, ANGAP and Tripartite Commission for their collaboration with The Peregrine Fund's Project in Madagascar. The Peregrine Fund cooperates with CARE and NYZS/Wildlife Conservation Society in the Masoala Integrated Conservation and Development Project (MICDP). This work was supported by grants from the Liz Claiborne and Art Ortenberg Foundation, Environment Now, John D. and Catherine T. MacArthur Foundation, and United States Agency for International Development. We would like to thank O. Langrand and L. Wilmé for their continued help and support in Madagascar. Thanks also to in-country project manager Richard Lewis and Stefania Strzalkowska for significant training of personnel.

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Range extensions and nesting of the Glossy-backed Becard *Pachyramphus surinamus* in central Amazonian Brazil

by Andrew Whittaker

Received 7 April 1994

The Glossy-backed Becard *P. surinamus* inhabits the canopy and subcanopy of *terra firme* forest in central Amazonian Brazil, where pairs are found mostly accompanying large or small mixed-species flocks or occasionally as solitary pairs. Among the reasons for the species being so poorly known are its rather restricted range in South America and the fact that it spends most of the time in the canopy and subcanopy of the rainforest, where it is very easy to overlook unless one knows its voice.

Distribution

Meyer de Schauensee (1970) reported the range of *P. surinamus* as Surinam, French Guiana, and eastern Brazil north of the Amazon. The following two records represent extensions of the range over two important zoogeographic barriers. The first, a sight record on 28 September 1989, was of a pair constructing a nest at Alvarães (3°20′S, 64°53′W), near Tefé. Alvarães is situated about 25 km west of Tefé on the south bank of the Rio Solimões (Amazon River). This represents an extension of about 560 km due west from the nearest previously known site, the Reserva Ducke some 20 km east-northeast of Manaus (Willis 1977). The second record was of birds observed in July 1993 on five separate days in the *terra firme* forest of the Jaú National Park, Amazonas, on the north bank of the Rio Jaú on the Patauá stream (1°52′08″S, 61°46′ 45″W). The Jaú National Park is on the west bank of the Rio Negro, about 100 km northwest of Novo Airão (Pádua 1983). This represents the first record for the species west of the Rio Negro, and extends its known range by about 240 km almost due west from the Projeto Dinâmica Biológica de Fragmentos Florestais (PDBFF) site 80 km north of Manaus (Stotz & Bierregaard 1989). There has also been another recent record west of the Rio Negro, at Fazenda São Francisco near Manacaparu about 50 km west-southwest of Manaus (Mario Cohn-Haft pers. comm.).

The range extension south of the Amazon follows the recent trend for 'Guianan' species (formerly known only from the northeastern corner of the Brazilian Basin) to be found first much further southwest in the Manaus area, and then even further southwest. Two species that followed this pattern were the Guianan Gnatcatcher *Polioptila guianensis* (Willis 1977) and the Crimson Fruitcrow *Haematoderus militaris* (Bierregaard *et al.* 1987, Stotz & Bierregaard 1989). These species were previously known only from the northeastern corner of the Brazilian Amazon, before being found near Manaus. Later *P. guianensis* was recorded from south of the Amazon River, from the upper Rio Urucu near Tefé (Peres & Whittaker 1991); and more recently still, both *P. guianensis* (D. Stotz pers. comm.) and *H. militaris* (Whittaker 1993) have been found another 1000 km southwest in the state of Rondonia. This must alert us to the possibility that *P. surinamus* may well be found to occur further south and west than the two new localities recorded here.

Breeding records

The first Glossy-backed Becard nests were recorded by Haverschmidt (1972) and Oniki & Willis (1982). I located a nest at the PDBFF reserves on 1 August 1988, while I was observing an active nest of the Ornate Hawk-eagle *Spizaetus ornatus* in an emergent leguminous tree. The area of the PDBFF reserves consists of a mosaic of *terre firme* forest and agricultural development (mostly cattle pasture) between 50 and 80 km north of Manaus (Bierregaard & Lovejoy 1988, Lovejoy & Bierregaard 1990). I noted a female Glossy-backed Becard leaving a nest suspended in the outer branches, about 25 m above the ground and about 8 m above the eagle's nest, which was in the second main fork off the tree trunk and contained two small young. The becard nest was globular with a side entrance, and made of what looked like small dark twigs. It seemed possible that the siting of the nest close to that of the eagle may have afforded protection against predators. I recorded a second nest, as already mentioned, on 28 September 1989 at Alvarães, near Tefé. This nest was in the process of being built in a dead, isolated tree about 40 m tall. Both male and female were bringing in small dead twigs to the ball-shaped nest with a side entrance. It was suspended on the end of a small branch about 30 m high, and was about 7–8 m from an active wasp nest. The nest seemed to be made of dead moss, rootlets, and small twigs and woven onto the end of the branch. The isolated tree was located in a strip of land that had been deforested and then abandoned and was overgrown by secondary growth about 3–5 m tall. A small strip of *terra firme* forest remained intact some 50 m away, offering a corridor to virgin *terra firme* forest, which was about 1 km away. Both Haverschmidt (1972) and Oniki & Willis (1982) recorded nesting associations of the Glossy-backed Becard with nests of social bees (*Trigona*); two nests recorded by Haverschmidt were actually sited on top of large active *Trigona* bees' nests. My observation of their nesting next to an active wasps' nest is the first for the species, but this is well known in the Cinnamon Becard *Pachyramphus cinnamomeus* (Skutch 1989) and White-winged Becard *Pachyramphus polychopterus* (pers. obs.).

These two records suggest that the main breeding season for *P. surinamus* may be at the height of the dry season, which in central Amazonia is August–September. This is in agreement with Oniki & Willis's record for Manaus (20 August), and Haverschmidt's (1972) evidence that *P. surinamus* breeds in Surinam from August to October, during the long dry season.

Acknowledgements

I would like to thank R. O. Bierregaard, Jr. for his help, advice and the opportunities given during the years of field work north of Manaus; the personnel at both the Biological Dynamics of Forest Fragments and the Fundação Vitória Amazônica, Museu Paraense Emílio Goeldi; and, especially, all who made the often difficult logistics run so smoothly. The manuscript benefited from the comments and discussions of Mario Cohn-Haft, Claude Gascon and Tânia Sanaiotti to whom I am very grateful. Financial support for field work was received from the World Wildlife Fund, the Smithsonian Institute, the Instituto National de Pesquisas da Amazônia (INPA), the John D. and Catherine T. MacArthur Foundation (Chicago) and the Fundação Vitória Amazônica. Many thanks to Mark Baker of Ecotour Expedition Inc for his constant help and support in my scientific work. Finally special thanks to my wife Nadime A. Whittaker for her constant support. This represents publication (no. 118) in the Biological Dynamics of Forest Fragments technical series.

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Field observations on the Azores Buzzard *Buteo buteo rothschildi*

by Tiziano Londei

Received 1 April 1994

The first human population settled the Azores in the 15th century and named the group "Açores" probably after the resident buzzard ("Açor" is the Portuguese word for Goshawk), the only resident diurnal raptor. Although this conspicuous bird is well-known in the Azores, there have been few published studies on it. The most comprehensive account is still that by Bannerman & Bannerman (1966), incorporating contributions by the Azorean ornithologist J. Agostinho. More information on taxonomy is offered by James (1984), who found this small-sized race of the Common Buzzard clearly distinct subspecifically on the basis of the statistical analysis of museum specimens.

While in the Azores from 17 to 29 August 1992, I had many opportunities of seeing these very common birds in the field. I made most of the observations in São Miguel (eight days) and to a lesser extent Faial (two days) and Terceira (two days). I used 8 × 40 binoculars and took photographs using a 300-mm lens.

Morphology

As can be seen in Figures 1 and 2, *rothschildi* is rather similar to nominate *buteo* in general shape, but it looks less massive. In flight its tail looks proportionately longer, whereas it is proportionately shorter from calculations of the tail-wing ratio (James 1984). I believe that the tail appears longer due to the relative narrowness of the wing.

A. H. James (*in litt.* 13 June 1993) stressed the resemblance in shape and size between *rothschildi* and *vulpinus*. However, while the skeletal

Figure 1. *Buteo buteo rothschildi* near São Mateus, Terceira, 22 August 1992.

proportion of the hand to the entire wing is considerably higher in *vulpinus* than nominate *buteo* (Eck 1991), my photographs of *rothschildi* show blunt wings, in which the above proportion is conceivably lower even than in nominate *buteo*. This consideration may be interesting in that James (1984) postulated that the Madeiran, Canary and Cape Verde Archipelagos were colonised by buzzards from continental Europe, where, nowadays, *vulpinus* is the typically migratory race of the Common Buzzard. But the Azores would be rarely influenced by buzzard immigration, as also suggested by the stable plumage pattern of the Azorean population (James 1984). I suggest that the particular wing shape of the Azores Buzzard may have evolved in the Azores, and the light builds of *rothschildi* and *vulpinus* may have resulted from separate adaptations to similar needs (e.g., to reducing the dependence on thermals).

Behaviour

It seemed from my observations that buzzards in the Azores, as they do elsewhere, preferred hunting when the weather was sunny and the ground dry. During three sunny days in São Miguel, from late morning to mid-afternoon, I recorded all the buzzards I saw while travelling by local buses across agricultural land (no route repeated). In this way, I counted a total of 137 birds in 55 km (2.5/km).

Figure 2. Hovering sequences of an individual of *Buteo b. rothschildi* (A) and of nominate *buteo* (B), starting (top) from equivalent postures. Since these outlines are from equally (0.4 s) spaced frames, a difference in flapping rate is suggested. Also a difference in silhouette should be noted.

I saw buzzards flying over all types of ground in the three islands I visited, from small towns to dense forests of the introduced coniferous tree *Cryptomeria japonica*. In the protected landscape zone of Monte da Guia, Faial, I saw a buzzard taking an unidentified prey from a coastal rocky surface sparsely covered with endemic *Erica azorica* and *Myrica faya* shrubs. Buzzard foraging, however, was most frequent on pasture land (20/38 observations), often in close proximity of grazing cattle (13/38 observations). In all habitats there was a marked tendency (30/38 observations) for foraging near stands of the reed *Arundo donax*, which is an introduced invasive species (Sjögren 1984).

Cramp & Simmons (1979) mention hanging in the wind or (when the wind fails) hovering before dropping onto prey as an occasional foraging technique of the Common Buzzard. It was the only method that I recorded for *rothschildi* (38 observations). The search flight usually ended with the bird hanging or hovering at some 10 m from the ground; it then dived, often hung or hovered for some seconds at 5–10 m from the ground, then dropped with wings and tail raised, controlling for speed. Even if the prey was caught, the buzzard did not rest on the ground more than a few seconds.

The only prey I was able to identify with certainty was a lizard and a large grasshopper, both taken from near reeds. Many other observed prey items looked like these. Furthermore, I often saw lizards taking cover amid the emerging rhizomes of the reeds, and I found some *Locusta migratoria* (form *danica*) adults resting near the reed tops. These grasshoppers were also present in the pasture grass, together with smaller species. Such insects are likely to hop away when cattle pass nearby, so that buzzards flying over cattle may locate their prey more easily. Throughout my observations in the Azores, I never saw anything like a mammal or bird in the talons of a buzzard.

I occasionally saw a buzzard skimming over reed tops, but never observed this as a successful hunting method. Although conditions and behaviour indicated locusts as a main prey, I never saw a buzzard walking on the ground, i.e. exploiting a feeding technique which is usual for the Common Buzzard elsewhere when locusts are abundant (Cramp & Simmons 1979).

In flight, the wing-beat of the Azores Buzzard is noticeably faster than that of the nominate race. Using motor-driven photograph sequences, I calculated a flapping rate of 4.3/s for an individual, compared to 3.5/s for an individual of nominate *buteo* in northern Italy, both during level flapping flight. My photographs are insufficient in number to calculate the flapping rate of hovering, but suggest a difference between *rothschildi* and nominate *buteo* (Fig. 2).

During my observations the birds were very vocal. After my presence alarmed a family in their presumed nest area (Lagoa do Congro, São Miguel), I could hear both adult calls and the shriller juvenile calls for some time. This confirmed what I had felt on previous occasions, i.e. that the voice of *rothschildi* sounded different from that of nominate *buteo*, being less husky, rather fluty. The *pee-yah* call (Weir & Picozzi 1975) of *rothschildi* seemed to descend less in pitch, maybe because its *yah* component was fainter. This is also suggested by a close examination of sonagrams from the Azores Buzzard (Knecht & Scheer 1971), in which the final part of the call appears less marked than in the sonagram from a Swedish bird (Cramp & Simmons 1979). Racial differences in voice between *rothschildi* and nominate *buteo* have not previously been reported.

General discussion

On the basis of both morphological and behavioural characters, the Azores Buzzard appears to be a quite distinct form; but more information is needed on its ecology.

Agostinho never saw the Azores Buzzard "attacking pigeons or other wild birds, only rats and rabbits" (Bannerman & Bannerman 1966). Melo Medeiros (pers. comm.) found rabbit bones at buzzard nests. However, my observations that the buzzards were most active when the sun was at its highest support the doubts expressed by Bannerman & Bannerman (1966), that the Azores Buzzard does not generally rely on rabbits as a source of food. This also seems a valid inference for rats. Anyway, since all Azorean mammals except one bat species have been introduced (Agostinho), they cannot have formed any part of the diet of this raptor when it colonised the Azores, almost certainly long ago (James 1984). Due to seasonal uniformity in these oceanic islands, grasshoppers and lizards might suffice the Azores Buzzard's needs all year round.

De Vries' opinion (in James 1984) that the reason for the lack of predatory species in the Azores is lack of prey species cannot be accepted without reservation, because, in addition to grasshoppers and lizards, there are many resident bird species that could be a reliable food source for a diversity of birds of prey, some of which have been recorded in the Azores (Le Grand 1983). However, if the alternative explanation were true, that the absence of other raptors is due to successful trophic competition by the Azores Buzzard, this raptor would have to feed on a wide diversity of prey. Literature and my observations fail to support this. It may be noted that most mid-oceanic islands worldwide tend to have only a single diurnal raptor species.

From James' (1984) values, *rothschildi* has proportionately larger bill and feet than nominate *buteo* (the latter is similar to *vulpinus* in these proportions). Large bill and feet also appear in other island races of the Common Buzzard; at least in the case of *arrigonii* (Sardinia), it is almost certainly a result of separate evolution from *rothschildi*. In a study of island passerines and their mainland counterparts, Grant (1965) found that the bill and tarsi are usually larger in the island forms, and he postulated that these differences are the result of the extension of activities related to a broader niche of the island populations. This explanation, however, does not seem to apply to the large-billed, large-footed Azores Buzzard, at least under the present conditions (nor to the analogous buzzard of Sardinia, which, in addition, must compete with several other raptors).

Unlike Hartog & Lavaleye (1981), I found the density of the Azores Buzzard impressive. The only previous quantitative information is that of Moore (1975), who recorded 10 buzzards on transects totalling 4.73 km in São Miguel in March. The resulting average is 2.1/km, similar to what I recorded. The habitat components I found to be associated with the Azores Buzzard's feeding activity, namely stands of reeds and cattle pastures, are the result of human settlement. A thorough study of this raptor's diet might reveal pre-adaptations to the present environment as well as adaptive changes undergone in the last few centuries.

Acknowledgements

F. Melo Medeiros, University of the Azores, provided me with useful information when I was there. A. H. James sent me constructive criticisms and suggestions after reading an early draft of the manuscript. D. W. Snow suggested considerable improvements for the final version.

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Re-evaluation of the taxonomic status of *Phylloscopus goodsoni* Hartert

by Per Alström, Urban Olsson & Peter R. Colston

Received 26 November 1993

In 1903 Katsumata obtained two specimens of a *Phylloscopus* warbler on Hainan Island, south China, which were later named *Phylloscopus goodsoni* (Hartert 1910). Ticehurst (1938) did not recognize *goodsoni* as a distinct species, but treated it as a subspecies of *P. ricketti* (breeding in south-central China). This latter treatment was followed by, for example, Williamson (1967), Watson *et al.* (1986) and Howard & Moore (1991). Cheng (1987) treated both *P. ricketti* and *goodsoni* as subspecies of *P. cantator* (breeding in northeastern India and Burma). Both of the specimens of *goodsoni* available to Hartert are in the American Museum of Natural History, New York (AMNH) (male collected at Lei Muimon on 12 January 1993, AMNH No. 450282 [type], and male collected on south Hainan on 22 December 1903, AMNH No. 450283). There is also one specimen in the Natural History Museum, Tring (BMNH), which shows the characters of *goodsoni* and is accepted as such in this paper. It was collected by J. Delacour and P. Jabouille at Konang Tcheou Wan in southwestern Guangdong Province, just north of Hainan Island, on 17 March 1933 (BMNH Reg. No. 1935.10.23.577) and labelled as *P. reguloides fokiensis*.

Description of *goodsoni*

Lateral crown-stripes olive-grey, darker posteriorly than anteriorly. Pale median crown-stripe more olive-tinged and less well defined on the anterior than on the posterior part. Upperparts uniformly green. Double pale yellow wing-bars, the one on the greater coverts relatively broad, the one on the median coverts narrower. Underside yellow, deepest on throat and breast, becoming paler towards the rear. White margin on inner web of outermost tail-feather ≤1, 0.5 and 1 mm, respectively, in the three specimens. Lower mandible all pale. In the three specimens P9, counted descendently, falls between P4/P3, P2/P1 and P3/P2, respectively, and P8 between P6/P5, ≈P5 and P6/P5, respectively. P5–P8 are emarginated. Measurements of wing, tail and bill are given in Table 1. All three specimens are labelled as males, but the short wing and tail of one individual indicate that it may actually be a female, as suggested by Hartert (1910).

TABLE 1

Measurements of wing (maximum length; Svensson 1992) and tail of males of all races of *Phylloscopus hainanus, P. davisoni, P. reguloides* and *P. ricketti*. The measurements were taken on specimens in the American Museum of Natural History and the Natural History Museum, Tring, and on live individuals

		Wing				Tail		
	n	range	mean	s.d.	*n*	range	mean	s.d.
P. hainanus	8	49.5–56.0	53.4	1.98	7	35.5–41.0	38.9	1.99
P. d. davisoni	11	51.0–57.0	54.5	1.95	11	37.5–42.5	40.4	1.59
P. d. disturbans	6	55.5–58.0	56.3	0.88	6	39.0–40.0	39.8	0.41
P. d. ogilviegranti	5	53.5–56.0	54.6	1.08	4	37.0–39.5	38.1	1.03
P. d. klossi	10	51.0–57.5	54.6	1.74	10	38.5–44.5	41.0	2.42
P. r. kashmiriensis	4	58.0–60.0	59.3	0.96	4	40.0–45.0	43.3	2.36
P. r. reguloides	8	58.0–64.5	60.5	2.36	8	38.5–47.5	43.1	2.85
P. r. assamensis	26	54.0–63.0	58.5	2.47	26	38.0–48.0	42.6	2.86
P. r. claudiae	7	58.5–65.5	62.8	2.40	7	41.5–46.5	44.7	1.78
P. r. fokiensis	14	58.5–64.5	61.0	1.53	14	39.5–46.5	43.0	1.69
P. r. ticehursti	6	57.5–61.5	60.2	1.47	6	44.0–50.0	46.8	2.25
P. r. goodsoni	3	54.5–61.0	58.0	3.28	3	38.0–41.0	40.0	1.73
P. ricketti	15	54.0–59.0	56.2	1.42	15	35.0–38.0	36.7	1.18

Comparisons of *goodsoni* to similar taxa

The crown pattern of *goodsoni* matches that of *P. reguloides* (Fig. 1) and *P. davisoni*. It is less striking than in *P. ricketti*, in which the lateral crown-stripes are contrastingly blackish throughout their lengths and the median crown-stripe is pale yellow and well marked throughout its length. The crown pattern of *goodsoni* is less distinct than in *P. cantator*, which shows darker and more uniformly coloured lateral crown-stripes, approaching *P. ricketti*. The crown pattern of *goodsoni* is also clearly different from that of *P. hainanus* in which the lateral crown-stripes are paler (only slightly darker than the mantle) and the median crown-stripe more distinct anteriorly (see plate 1 of Olsson *et al.* 1993).

The colour of the underparts of *goodsoni* is intermediate between *P. ricketti* and the yellowest subspecies of *P. reguloides* and *P. davisoni*. They are paler yellow in *goodsoni* than in *P. hainanus*, and clearly different from *P. cantator*, which shows clear yellow throat, breast and undertail-coverts, contrasting with white belly and flanks. In *goodsoni*, as well as in *P. ricketti, P. cantator* and most subspecies of *P. reguloides*, the outer rectrices show narrow pale margins to the inner webs. In contrast, in *P. hainanus* the two outermost pairs are largely white, and in all subspecies of *P. davisoni* except *ogilviegranti* the outermost pair is extensively white.

The wing formula of *goodsoni* is similar to that of *P. reguloides fokiensis* and differs only slightly from *P. ricketti*. It differs from both

Figure 1. From left to right: *Phylloscopus reguloides fokiensis* (AMNH No. 450258, type specimen), *P. ricketti goodsoni* (AMNH No. 450283), *P. ricketti goodsoni* (AMNH No. 450282, type specimen) and two individuals of *P. r. ricketti*. (Photo: Per Alström).

P. hainanus and *P. davisoni* in that there is no emargination on P4. Judging from the available measurements of males (Table 1), *goodsoni* is slightly smaller than *P. reguloides*. However, the wide range in wing-length of the three specimens of *goodsoni* suggests that the smallest one may be wrongly sexed, in which case the measurements may be even more similar to *P. reguloides*. Compared to *P. ricketti*, both the average wing- and tail-length of *goodsoni* are larger, a difference that would be further enhanced if the smallest *goodsoni* is a female. On the other hand, the average bill-length of *ricketti* exceeds that of *goodsoni* (Table 2). In all races of *P. davisoni*, the wing-lengths are on average shorter than in *goodsoni*. *P. davisoni* further differs from *goodsoni* by its (on average) shorter bill (Table 2).

Discussion

It is difficult to decide the taxonomic position of *goodsoni* on the basis of a sample of only three specimens. The specimens are, however, distinctive enough to warrant such an attempt. They differ significantly and consistently from all other taxa, and as all three specimens come from the same geographical area, *goodsoni* should be retained as a distinct taxon. However, we do not agree with earlier authors that it should be treated as a subspecies of *P. ricketti*. Hartert considered the species to stand between *P. ricketti* and *P. trochiloides* (reference to *P. trochiloides* in this context certainly refers to *P. reguloides*, which in those days was included in *P. trochiloides*). In our opinion, the pattern of the crown shows that *goodsoni* is more closely related to *P. reguloides* and *P. davisoni* than to *P. ricketti*. This character is not subject to any significant intraspecific variation in *P. reguloides* and *P. davisoni*, unlike

TABLE 2

Measurements of bill (measured to skull) of males of all races of *Phylloscopus hainanus, P. davisoni, P. reguloides* and *P. ricketti*. The measurements were taken on specimens in the American Museum of Natural History and the Natural History Museum, Tring and on live individuals

	n	range	mean	s.d.
P. hainanus	8	12.2–12.4	12.5	0.24
P. d. davisoni	11	11.1–12.3	11.7	0.36
P. d. disturbans	6	11.0–12.1	11.6	0.48
P. d. ogilviegranti	5	11.3–12.5	12.0	0.52
P. d. klossi	17	11.0–12.8	11.8	0.58
P. r. kashmiriensis	4	12.1–13.3	12.6	0.51
P. r. reguloides	6	11.6–13.0	12.5	0.48
P. r. assamensis	20	11.4–13.1	12.3	0.49
P. r. claudiae	7	12.3–13.9	13.1	0.57
P. r. fokiensis	11	12.3–13.4	12.9	0.41
P. r. ticehursti	6	11.9–13.1	12.5	0.53
P. r. goodsoni	3	12.7–13.1	12.8	0.23
P. ricketti	15	13.0–14.0	13.4	0.26

the colour of the underparts, size and wing formula, which are all very variable features. The size, wing formula and tail pattern, which beside general colouration are the main morphological differences between *P. reguloides* and *P. davisoni*, indicate that *goodsoni* belongs with *P. reguloides*. On present knowledge, we suggest *goodsoni* be treated as a subspecies of *P. reguloides*.

It is not known where *goodsoni* breeds. Since the two specimens of *goodsoni* from Hainan were collected in midwinter, they may have been only wintering there. We have not seen any *goodsoni* on any of three spring visits to Hainan, and we are not aware of any sightings by others. However, until quite recently the situation was obscured by the fact that *P. hainanus*, breeding on Hainan (Olsson *et al.* 1993), was believed to be synonymous with *goodsoni*. Neither Etchécopar & Hüe (1983), nor Meyer de Schauensee (1984) nor Cheng (1987) list *P. reguloides* from Hainan. The specimen of *goodsoni* from the mainland just north of Hainan on 17 March may have been a bird on the breeding grounds, although it cannot be ruled out that it was on migration.

Summary

The taxonomic status of *Phylloscopus goodsoni* Hartert is evaluated. The most accepted treatment up to now has been to place it with *P. ricketti*. This paper presents evidence that it is better treated as a subspecies of *P. reguloides*, which it closely resembles except for being more yellow on the underparts than any other subspecies.

Acknowledgements

We are most grateful to the American Museum of Natural History, and in particular to Mary LeCroy, for much assistance during P.A.'s visit there, and to R. A. Sloss for sending one specimen of *goodsoni* on loan to PRC at Tring. Dr. Per Sundberg and Dr. R. Prŷs-Jones read earlier drafts and made many useful and constructive comments.

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Noteworthy bird observations from Chile

by Steve N. G. Howell & Sophie Webb

Received 19 April 1994

Like other South American countries, much remains to be learned about the avifauna of Chile, particularly with respect to local distribution of resident species and the status of non-breeding migrants. Hellmayr (1932) first summarised the general distribution of Chilean birds, and the excellent works by Goodall *et al.* (1946, 1951) and Johnson (1965, 1967, 1972) filled in more details, particularly concerning natural history. Araya & Millie (1986) incompletely summarise the distributional information of these earlier works. A number of recent authors have added observations on the status and distribution of Chilean birds, e.g. Howell (1975), Rasmussen & Lopez (1988), Marin *et al.* (1989), Sallaberry *et al.* (1992), and Vuilleumier *et al.* (1993).

We visited Chile for ten weeks in the austral spring and early summer, from 8 November to 11 December 1992 and 31 October to 6 December 1993, and Howell visited Chile for a further five weeks, 24 October to 26 November, and 18 December 1994. During these visits we travelled through virtually the entire country observing birds. We here report new information concerning 36 species, including data kindly contributed by R. S. Ridgely (RSR in following text).

NORTHERN GIANT PETREL *Macroneetes halli*

SNGH studied at least two Northern Giant Petrels 5 km S of Cape Horn, 18 December 1994. The brownish-red tip to the bill was seen clearly, in contrast to the greenish tip of numerous Southern Giant Petrels *M. giganteus* present for comparison; SNGH had seen hundreds of both species in the preceding two weeks, both at sea and on land.

The only prior records we are aware of from Chile are four beached carcasses "picked up on the Chilean coasts" (Johnson 1972). It seems probable that small numbers occur regularly in Chilean waters although specific records are lacking.

WESTLAND PETREL *Procellaria westlandica*

We observed one bird at sea approximately 15 km W of Valparaiso, Valparaiso province, 2 December 1993, and SNGH saw and photographed two in the same area, 8 November 1994. The birds on the latter date showed heavy moult of flight feathers (inner and middle primaries and tail), and one showed a pale, moult-induced bar on the upper wing coverts; this was in contrast to 75 White-chinned Petrels *P. aequinoctialis* seen on that date, only two of which had commenced wing moult, with one or two inner primaries dropped. In addition, SNGH saw three Westland Petrels in Argentine waters, east of the mouth of the Beagle Channel, on 3 December 1994: single birds at 55°04′S 66°02′W, 55°00′S 65°15′W, and 54°24′S 64°28′W. Two of the three showed obvious moult of middle to outer primaries; the third showed no signs of active moult. On all occasions, the similar White-chinned Petrel was also seen, and the relatively shorter and thicker, black-tipped bill of the Westland Petrel was observed clearly.

Apparently there have been only two prior records of this little-known petrel from Chile, and one from Argentina (Pearman 1994), although the increasing body of records points to the species being a regular non-breeding visitor to waters of southern Chile and adjacent Argentina. Presumably it has been overlooked because of its similarity to the common White-chinned Petrel.

GREAT SHEARWATER *Puffinus gravis*

On 18 December 1994 SNGH observed three Great Shearwaters at close range, in loose association with 10,000+ Sooty Shearwaters *P. griseus* 2–5 km E of Cape Horn. The only previous record we are aware of from Chilean waters is "small numbers" seen in the Straits of Magellan in January 1966 (Johnson 1972, Arraya & Millie 1986). Probably this shearwater, like the following species, is a regular visitor to Chile's southern waters.

MANX SHEARWATER *Puffinus puffinus*

We watched at least 150 Manx Shearwaters milling at the eastern entrance to the Straits of Magellan, Punta Dungeness, Magallanes province, 28 November 1992, and SNGH saw two birds there on 24 November 1994 and one 5 km E of Cape Horn, 18 December 1994. Although there appear to be only two previous records from Chile

(Arraya & Millie 1986), it seems probable that this species is a regular visitor to Chilean waters during the austral summer.

LITTLE BLUE HERON *Egretta caerulea*

An adult at San Pedro de Atacama, El Loa province, 22 November 1993, and a moulting immature photographed at La Ligua estuary, Petorca province, 29 November 1993, represent the southernmost records of this species. The Little Blue Heron is a vagrant in Chile, and previous records (the first in November 1971) are all from the vicinity of Arica, Arica province, in the extreme north (Johnson 1972, Arraya & Millie 1986, R. S. Ridgely pers. comm.), 370 km N of San Pedro and 1450 km N of La Ligua. The southernmost site where this species nests on the Pacific coast is the Mejia lagoons of Arequipa, Peru.

RUDDY-HEADED GOOSE *Chloephaga rubidiceps*

On northern Isla Grande, Tierra del Fuego province, we saw 10 birds (including 3 pairs) between Porvenir and Punta Percy on 26 November 1992, and 5 (including 2 pairs) between Punta Percy and Bahia Azul, 27 November 1992. On the mainland in southern Magallanes province we found a pair with 7 small downy young at Km 135.5 along Hwy 255, on 27–28 November 1992. In 1994, SNGH saw 2 pairs N of Porvenir on 1 November and at least 21 adults, including 8 pairs, along Highway 255 from Km post 111 to Punta Dungeness, 23–24 November. RSR saw 6 pairs (including one with 8 young) along Hwy 255 between San Gregorio and Tehuelche, 23 November 1989, and 3 pairs N of Porvenir, 24 November 1989. Concerning Isla Grande, Jehl & Rumboll (1976) noted "this species is clearly on the verge of extirpation", although it appears to be persisting in small numbers. Even thirty years ago Johnson (1965) considered Ruddy-headed Geese very rare on the Chilean mainland and we know of no other recent nesting records there.

WHITE-CHEEKED PINTAIL *Anas bahamensis*

We observed 5 birds (apparently 2 pairs and 1 imm ♀) at La Ligua estuary, Petorca province, 29 November 1993, in association with 600 Yellow-billed Pintails *A. georgica*. Considered an irregular and uncommon to rare visitor which may go unrecorded for a number of years (Johnson 1965).

WHITE-TAILED KITE *Elanus leucurus*

One on 6 December 1993 at Mar Brava, on the NW corner of Isla Chiloe, *c.* 20 km W of Ancud, Chiloe province, appears to be the first island record of this species whose southern range limit in Chile otherwise is the adjacent mainland province of Llanquihue (Johnson 1965, Araya & Millie 1986).

RUFOUS-TAILED HAWK *Buteo ventralis*

We watched a juvenile circling over the Laguna de Maule road at Km post 60, Talca province, on 2 November 1993. The bird was flying over pasture land between forested hillsides, and resembled a light morph juvenile Red-tailed Hawk *B. jamaicensis* from the western U.S., although the wing coverts, both below and above, appeared darker, without a noticeable band of pale mottling across the upperwing coverts. SNGH observed another juvenile hunting over open moorland adjacent to forest patches, 5 km W of Punta Arenas, Magallanes province, 25 November 1994. RSR noted a pair soaring near Antillanca, Parque Nacional Puyehue, Osorno province, 8 December 1986, and one bird there on 10 November 1987. Clark (1986) summarised information available on this poorly known species; we report these observations to supplement the meagre record.

CALIFORNIA QUAIL *Callipepla californica*

This non-native species was common and conspicuous at San Pedro de Atacama, El Loa province, 22–26 November 1993, and presumably is a fairly recent introduction there. The species is otherwise recorded only in central Chile, N to the Huasco Valley, 680 km to the S of San Pedro (Johnson 1965, Araya & Millie 1986).

BLACK CRAKE (RAIL) *Laterallus jamaicensis*

SNGH found the desiccated remains, including both wings in good condition, of a Black Crake on a levee through *Spartina* saltmarsh at La Ligua estuary, 29 October 1994. Potential avian predators nesting at this marsh included Cinereous Harrier *Circus cinereus* and Short-eared *Asio flammeus* and Burrowing *Athene noctua* owls.

Little information exists concerning the occurrence of this highly secretive bird in Chile. The few prior records are from the central provinces, with apparently none reported in the past 25 years. Despite looking for it "within and beyond its known range" Johnson (1965) found the species only in a stretch of marshy land on the outskirts of Santiago. As in California, it seems probable that this crake occurs in both salt and fresh water marshes, and future searches should take into account this possibility.

COMMON MOORHEN *Gallinula chloropus*

On 26 November 1993 we saw two adults at Chacance, the confluence of the Loa and San Salvador rivers, Tocopilla province (*c.* 1200 m elevation). The slate-coloured upperparts of the birds suggested that the puna race *garmani*, rather than *pauxilla* of coastal Peru, was involved (see under Puna Snipe). SNGH also saw 20 adults and one immature at a reservoir in the Azapa Valley, Arica Province, 16 November 1994. In Chile this species is otherwise reported only from the puna zone (above 3500 m) of the high Andes, 200 km N of Chacance (Johnson 1965, Fjeldså & Krabbe 1990), and from the mouth of the Lluta river, Arica province, where one was seen in May 1970 (Johnson 1972).

HORNED COOT *Fulica cornuta*

This large coot is listed as a threatened species by ICBP (1992) who noted that a "large group" was seen in February 1989 at "Laguna Meñique (untraced but near Salar de Atacama)". We visited Laguna

Meñique (elevation *c.* 4250 m; 23° 45′S, 67° 48′W), which lies in the bleak puna grassland 100 km SSE of San Pedro de Atacama, on 23 November 1993, and counted 180–200 Horned Coots and 70–80 nests, with 30–40 birds (but no nesting) on adjacent L. Miscanti. Most birds were still completing nests, some were incubating eggs, and at least two pairs had small chicks.

PERUVIAN THICK-KNEE *Burhinus superciliaris*

On 7 December 1992 we found a group of 21 birds, including a pair with two juveniles and a pair with an immature, in the Azapa Valley, Arica province. Although Araya & Millie (1986) reported only two Chilean records of this species (1851 and 1971), Sallaberry *et al.* (1992) found a pair of thick-knees nesting in the Azapa Valley in January 1990, and in February 1990 found groups up to ten individuals. Sallaberry (pers. comm.) subsequently found the species in the nearby Lluta Valley where we saw 3 birds on 6 December 1992 and SNGH found a pair with a nest and two eggs, 12 November 1994, and another pair with a half-grown chick, 16 November 1994. Apparently the species is a fairly common but overlooked, mainly nocturnal resident in these oasis valleys.

DIADEMED SANDPIPER-PLOVER *Phegornis mitchellii*

The biology of this enigmatic species is poorly known (cf. Johnson 1965, 1972, Fjeldså & Krabbe 1990). On 4 December 1993, at El Yeso, Santiago province, we saw one pair with two medium-large chicks and, at a nearby site, a second pair with a dependent(?) juvenile and two small chicks. On our initial approach the adults of this second pair ran off, leading the chicks to cover. Later, one adult occasionally pecked at one of the chicks and stood over it in a dominant manner. At the same time, this second pair associated closely with the juvenile, running to it in response to whistled calls it gave, and showed no aggression toward it. We saw no other adults in the vicinity and, although not certain, it appeared that the chicks and juvenile belonged to the same pair, suggesting that Diademed Sandpiper-plovers may, at least occasionally, be double-brooded. The close pair bonds of adults with chicks further suggest the species is monogynous.

The chicks and juvenile all had bright yellow-orange legs like those of the adult, not "greenish-yellow" as suggested by Hayman *et al.* (1986). Also, this species' vocabulary is more extensive than suggested by Hayman *et al.* (1986) or Fjeldså & Krabbe (1990): adults gave a clipped *pic* or *bic*, and *pic-pic* call while foraging and in flight; members of a pair greeted one another with a quiet, bickering chatter; a plaintive, slightly drawn-out *wheehu*, a less plaintive, fairly sharp *whee-u*!, and a surprisingly loud screamed whistle, *whEEHU*! seemed to be given as alarm calls.

WILLET *Catoptrophorus semipalmatus*

We noted one at Las Cruces, San Antonio province, 6 December 1993. Willets seem to be genuinely rare along the central coast, whence there are two other reports prior to the Las Cruces bird (Araya & Millie

1986), although they are common in the extreme north of Chile (Johnson 1972, pers. obs., Sallaberry pers. comm.).

MARBLED GODWIT *Limosa fedoa*

We observed and photographed a single bird at La Ligua estuary, 29 November 1993. Its large size and, especially, its very long bill suggested it was a female. There are only two prior Chilean records, one from Arica, the other from central Chile (Johnson 1965, Araya & Millie 1986). The latter report and our sighting are the southernmost reports of this species which is rare even in Peru and Ecuador (R. S. Ridgely pers. comm.).

PUNA SNIPE *Gallinago andina*

We saw one at El Tatio, El Loa province, on 25 November 1993, on a tributary of the Loa river (*c.* 4000 m elevation). In Chile this species is known elsewhere from the high Andes to the north (nearest site 250 km from El Tatio), and from the lower reaches of the Loa river, 150 km W of El Tatio. Our record fills a gap in the distribution of this species which, like *Gallinula chloropus* (see above), appears to occur in the limited areas of suitable habitat at both high and middle elevations in northern Chile.

PERUVIAN DOVE *Zenaida meloda*

We found this dove common at San Pedro de Atacama, 22–26 November 1993, and saw 6 at Toconao, an oasis 38 km SE of San Pedro, on 23 November 1993. We also saw 1 near Vallenar, in the Huasco Valley, Huasco province, on 28 November 1993. These records are all away from the range previously ascribed to the species: S to Quillagua (200 km NW of San Pedro) and disjunctly in the Copiapo Valley (135 km N of Vallenar). Peruvian Doves thus appear to be expanding their range in northern Chile.

Traditionally this form has been considered conspecific with the White-winged Dove *Z. asiatica* of North and Middle America. However, *meloda* is now generally recognized as a separate species, based on its strikingly distinct song, in combination with morphological characters (R. S. Ridgely pers. comm.).

BLACK-WINGED GROUND-DOVE *Metriopelia melanoptera*

We noted one at El Barquito (near sea level), on the south side of Chañaral, Chañaral province, on 27 November 1993. In Chile this is known only as a bird of the mountains (900–4800 m) where it engages in seasonal movements (Johnson 1965); it has been recorded accidentally to near sea level in Peru (Fjeldså & Krabbe 1990).

SPARKLING VIOLET-EAR *Colibri coruscans*

We found one singing in *Eucalyptus* trees at Putre, Parinacota province, 2–6 December 1992. There are three previous records from Chile, in July 1985 (Marin *et al.* 1985) and November 1988 and January 1989 (Sallaberry *et al.* 1992), all from the high northern Andes.

PERUVIAN SHEARTAIL *Thaumastura cora*

We observed 1 ♂ and 1 imm ♂, the latter singing, in the Azapa Valley, Arica province, 30 November–1 December 1992. Johnson (1972) reported the first record of this species for Chile, 2 ♂♂ seen in the Azapa Valley, November 1971, and Araya & Millie (1986) noted this still as the only record for Chile.

WRENLIKE RUSHBIRD *Phleocryptes melanops*

We recorded 10–15 birds, including some completing their nests, at Chacance on 26 November 1993. This population, described as a distinct subspecies (*loaensis*) by Philippi & Goodall (1946), was reported as still common at Chacance in December 1968 (Howell 1975). Despite continued use of Chacance as a popular recreation area (as noted by Howell 1975), combined with habitat modification (e.g., less extensive and lower rushes judging from comparison with a photo in Johnson 1965, p. 278), it is pleasing to report that both rushbirds and the endemic subspecies of Many-coloured Rush-tyrant *Tachuris rubrigastra loaensis* remain common. (We noted 20–25 of the latter, including juveniles.)

BAND-TAILED EARTHCREEPER *Eremobius phoenicurus*

On 24 November 1994 SNGH found two Band-tailed Earthcreepers at km post 10 (i.e. 10 km SE of Kimiri Aike) on the side road to the Punta Delgada ferry crossing of the Straits of Magellan, Magallanes province. The birds behaved as an agitated pair and were collecting and carrying food in their bills, presumably to feed young in a nest. The habitat was open, flat, coarse sandy ground with low tussock grass (to 15 cm) and a few scattered low bushes (to 1.5 m) atop which at least one bird sang on several occasions.

Vuilleumier *et al.* (1993) discussed the one prior Chilean a record of this distinctive earthcreeper, a bird collected in November 1988 only a few km from the 1994 site. It seems probable that the species has been overlooked as a local breeding bird in Chile as it is common in adjacent Argentina.

AUSTRAL CANASTERO *Asthenes anthoides*

This species is considered threatened by ICBP (1992). In November 1992 we found it fairly common but local on northern Isla Grande and on the adjacent mainland: 3, including a pair, at Km 105.5 N of Porvenir, 27 November; 1 singing and 4–5 heard near Pta. Delgada, 27 November; 8–10 at Pta. Dungeness, 27–28 November; 3–4 heard along highways 255 and 9 between Pta. Delgada and the junction for Seno Otway, 28 November; 2 seen and 3–4 heard on the road to Rio Verde (30–50 km N of Punta Arenas), 29 November. In November 1994 SNGH found Austral Canasteros sufficiently common in these same areas that he did not record specific observations ("fairly common, recorded in suitable habitat, of which there is plenty"), and we suggest that this species' status of "threatened" be reconsidered. The birds were in rolling to level grassy plains with scattered to fairly concentrated areas of low scrubby bushes and patches of bunch grass.

They foraged on the ground and low in bushes, and sang from atop bushes and on fences. RSR also noted small numbers of Austral Canasteros in these same areas, 1986–1989.

SHARP-BILLED (LESSER) CANASTERO *Asthenes pyrrholeuca*

SNGH found two birds singing from atop bushes at Km 8 on the Punta Dungeness road, Magallanes province, 24 November 1994. The birds were in an area of fairly dense bushes (to 2.5 m high) about 200 × 300 m in area, a habitat rare in this part of Chile, and too dense for the Austral Canastero (which was present in nearby, more open habitats). SNGH is very familiar with the Sharp-billed Canastero and its song from central Chile, where it occurs south to Aysen province (Johnson 1967, Ridgely & Tudor 1994, Howell pers. obs.), some 500 km to the north of this observation.

GREY-BELLIED SHRIKE-TYRANT *Agriornis microptera*

This species appeared to be fairly common in and around San Pedro de Atacama, 22–26 November 1993, where we saw a pair with 1–2 juveniles, another apparent pair, and two single birds. First found in Chile in the high Andes of Tarapaca province (Johnson 1965), and subsequently reported from other localities, including oases near San Pedro, by Marin *et al.* (1989). The records of Marin *et al.* (1989) all were during July-August, and our observations support their surmise that this species is resident in the vicinity of San Pedro.

WHITE-TAILED SHRIKE-TYRANT *A. andicola*

We observed one on a rocky slope overlooking a bog, 2 km SE of Parinacota, Parinacota province (*c.* 4350 m), on 4 December 1992. We suspect the bird was a juvenile since it was in extremely fresh plumage and showed dusky streaking on the chest as do juveniles of the other three Chilean species of shrike-tyrants (pers. obs.). ICBP (1992) consider this little-known bird a threatened species and list the few recent records from Chile.

BANK SWALLOW (SAND MARTIN) *Riparia riparia*

We noted one Bank Swallow with other swallows in the Azapa Valley, 7 December 1992, 6–7 at San Pedro de Atacama, 22 November 1993, and 7–8 at Chacance, 26 November 1993. This species is generally considered rare in Chile where it was first recorded in 1968 (Howell 1975). There have been a few subsequent reports from north and central Chile (Johnson 1972, Ridgely & Tudor 1989), and a recent specimen from Magallanes (Vuilleumier *et al.* 1993).

CLIFF SWALLOW *Hirundo pyrrhonota*

We saw single Cliff Swallows in the Lluta Valley on 1 and 6 December 1992, in the Azapa Valley on 7 December 1992, and at Chacance, 26 November 1993, and 30–40 with 40–50 Barn Swallows *H. rustica* at San Pedro de Atacama, 22 November 1993. SNGH also saw four in the Lluta Valley, 15 November 1994. Araya & Millie (1986) reported only two Chilean records, but we suspect that both Cliff

Swallow and Bank Swallow are regular but often overlooked migrants in northern Chile.

GIANT CONEBILL *Oreomanes fraseri*

We observed and photographed one feeding in a grove of *Polylepis* trees, 14 km by road SW of Putre, at *c.* 3300 m elevation, on 1 December 1992. The only previous report from Chile is that of three birds seen at nearby Zapahuira in December 1991 (Sallaberry *et al.* 1992).

GOLDEN-BILLED SALTATOR *Saltator aurantiirostris*

We saw one at Putre on 2 December 1992, and SNGH saw at least five birds there, including one collecting food and one singing, 13–15 November 1994. Although Araya & Millie (1986) noted only one Chilean record, Sallaberry *et al.* (1992) reported sightings of this species from Putre in the months of November and February, between 1988 and 1991. Apparently the Golden-billed Saltator is a local breeding resident in extreme northern Chile.

SLENDER-BILLED FINCH *Xenospingus concolor*

We found two adults (apparently a pair), one of them singing, at Chacance on 26 November 1993. This is a range extension of 28 km south along the Loa river from the previous southernmost occurrence at Quillagua (Johnson 1965). The recent planting of ornamental shade trees at Chacance may have helped this species reach the site, since it was not recorded there in 1968 by Howell (1975).

BLACK-THROATED FLOWERPIERCER *Diglossa brunneiventris*

We observed up to 12 birds per day in and around Putre during 2–6 December 1992, and SNGH saw at least six birds there, 13 November 1994. Most birds were singing strongly and we noted possible courtship chasing by apparent pairs, suggesting the species was nesting. The only previous records from Chile are also from Putre, in February 1948 (Johnson 1965), February 1989 (Sallaberry *et al.* 1992), and December 1989 (RSR) but, like Golden-billed Saltator, the Black-throated Flowerpiercer appears to be a local breeding resident in extreme northern Chile.

SHINY COWBIRD *Molothrus bonariensis*

We noted up to five birds in both the Azapa and Lluta valleys, 30 November–1 December 1992, and SNGH saw small numbers there in November 1994. Marin *et al.* (1989), in documenting the spread of this species in Chile, had records north only to Quebrada de Camarones (65 km S of Azapa) where cowbirds were first noted in 1986. The species appears to be continuing to expand its range in Chile.

Acknowledgements

We thank Will Russell and WINGS Inc. for partially sponsoring our visits to Chile, Michel Sallaberry for his hospitality and for communicating some of his extensive knowledge of Chilean bird distribution, and Robert S. Ridgely for commenting on a draft of this note. This is contribution number 642 of the Point Reyes Bird Observatory.

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IN BRIEF

FIRST RECORD OF KEMP'S LONGBILL *MACROSPHENUS KEMPI* IN CAMEROON

Kemp's Longbill *Macrosphenus kempi* is known to occur locally in forest from Sierra Leone, southeastern Guinea and Liberia to the Niger River in southeastern Nigeria (Hall & Moreau 1970, Keith in prep.). On 30 May 1992, one was seen in the northern part of Korup National Park, Southwest Province, Cameroon (5°16′N, 9°11′E). It was distinguished from the other two *Macrosphenus* found in this region, *flavicans* and *concolor*, by its entirely dark brown upperparts, grey throat, breast and centre of belly, and prominent reddish-chestnut flanks which are characteristic of the subspecies *flammeus* of southeastern Nigeria (Marchant 1950). Also noted were a pale-coloured eye and a distinctive song which was a series of about eight clear whistles, rising slightly in pitch. An imitation of the song lured the bird to within 8 m. The bird was found in dense undergrowth of lowland primary forest. S. Keen subsequently observed two individuals including an apparent juvenile (dull plumage) in the same area on 25 November 1992, and CGRB saw one there on 12 March 1994. PGR had a probable sighting of the species about 2 km away on 12 June 1991.

These observations are the first records of the species for Cameroon, and extend its range *c*. 240 km eastwards. The presence of *M. kempi* in Korup National Park is of particular interest because it is apparently the only site where *M. kempi* and the Yellow Longbill *M. flavicans* are sympatric. These two forms have been considered conspecific by some authors (Serle & Morel 1977, Elgood 1982), but most authors now consider them separate species (Hall & Moreau 1970, Mackworth-Praed & Grant 1973, Collar & Stuart 1985, Sibley & Monroe 1990, Keith in prep.). In addition to their sympatry, with no evidence of intergradation (*M. flavicans* is fairly common in Korup), it is noteworthy that the song we heard was quite different from that of *M. flavicans* that we know from this part of Cameroon, which is a series of whistles descending in pitch, similar to that of Brown-chested Alethe *Alethe poliocephala* (Chappius 1979), whilst the song of *M. kempi* rose slightly in pitch and seemed slower in delivery. It should be noted, however, that Keith (in prep.) mentions another song of *M. kempi* which is quite similar to that of *M. flavicans*. There seems no doubt that *M. kempi* and *M. flavicans* are specifically distinct.

We are grateful to S. Keith for allowing us access to the draft accounts of *Birds of Africa* Volume 5, to S. Keen for details of his observations and to E. M. Bowden for assistance in the field.

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CHRISTOPHER G. R. BOWDEN

28 December 1993

GREAT BLUE HERONS *ARDEA HERODIAS* AND MAGNIFICENT FRIGATEBIRDS *FREGATA MAGNIFICENS* FEEDING ON YOUNG TURTLES

On 25 June 1990, on a sandy beach on the north coast of Santa Cruz Island, Galapagos Islands, Ecuador, two Great Blue Herons *Ardea herodias* were watched feeding on young Pacific Green Turtles *Chelodia mydas*. A number of these turtles had evidently laid eggs in nests situated in the low sand dune ridge at the back of the beach, and these eggs were in the process of hatching, with young turtles approximately 5 cm in length emerging from the sand and immediately heading for the sea. The two herons were some 50 m apart and both spent the period from 14.30 to 18.00 hours feeding on the young turtles. One of the herons was watched continuously for an hour and during this period it rested for a total of 11 minutes, and caught and ate a total of 9 young turtles. Casual observation of the second heron showed a similar pattern of activity. Assuming a fairly consistent feeding pattern this works out at one turtle for every 5.4 minutes of feeding activity, so the total number of turtles taken by these two birds during the afternoon must have been considerable (approximately 100). It was of interest to see that 6 of the turtles caught within the one-hour period were taken before they had emerged onto the surface of the sand, but it was not possible to ascertain whether they were first detected by sound or by the slight movement of sand grains on the surface of the dune. The prey were usually caught cross-wise in the bill and then tossed in the air until they could be swallowed head first. The taking of turtles by this species is not mentioned specifically by Bent (1926, *Life Histories of North American Marsh Birds*), Palmer (1962, *Handbook of North American Birds*, vol. 1) or Hancock & Kushlan (1984, *The Herons Handbook*).

At 1730 hours two Magnificent Frigatebirds *Fregata magnificens* arrived and spent 15 minutes hovering low over the sand and picking off young turtles that had escaped the attentions of the herons. Frigatebirds are known to catch significant numbers of newly hatched turtles on beaches.

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BRYAN SAGE

27 January 1994

FEEDING HABITS OF THE GREEN HERON IN MAURITIUS

This note records observations on hunting methods, success and feeding rates of the Green Heron *Butorides striatus*, in Mauritius, Indian Ocean, between 15 and 25 October 1993. Most observations were made at Grand Gaube on the north coast, where the shore is mainly lava rocks and sand interspersed, at low tide, with shallow pools; some stretches were simply sand beaches with no rocks. Additional observations were made at the Terre Rouge estuary on the west coast. This consisted of mud flats and banks, much disturbed at low tide by people digging for worms. Much of the water was shallow enough for the herons to wade in; one favoured section was covered by algae or weed. I watched herons hunting, as opportunity offered, and recorded the methods used, the number of strikes for food made in timed periods and their success rates. I estimated the size of captured prey by reference to the bill length of the herons. At Grand Gaube I watched herons down to about 30 m, but at Terre Rouge they were not so accessible and I watched them through a telescope at ranges of up to about 150 m.

At Grand Gaube the herons hunted solitarily and did not appear to defend feeding areas. I only once saw a case of aggression when one flew at and drove off another. At Terre Rouge, many hunted solitarily, but I saw a group of three no more than 10 m apart from one another on a rock and another group of five, similarly close to one another, hunting in water. Some individuals flew upwards of $\frac{3}{4}$ km from one feeding spot to another. Feeding was observed throughout daylight hours with a tendency for greater activity at low tide, as reported in the Seychelles by Hancock & Elliott (1978, *Herons of the World*).

Two principal hunting methods were observed and these were consistent with those described by Meyerriecks (1960, *Publ. Nuttall Orn. Cl. 2:* 1–158). At Terre Rouge the herons adopted the stand and wait method, standing for long periods in shallow water waiting for prey to approach. At Grand Gaube the usual method was to walk through shallow pools at the edge of the shore actively searching for prey. Both Meyerriecks and Hancock & Elliott refer only to slow walking, but some herons were remarkably active, rushing from one spot to another as they hunted. In a variant of the stand and wait method (also described by Meyerriecks) seen occasionally at Grand Gaube, a heron would walk or fly from rock to rock and briefly stand and wait for prey to come within reach in the surrounding water. The only prey seen was fish. At Grand Gaube shoals of small fish up to about 40 mm long were extremely abundant, frequently coming so close to the water's edge as to be in danger of stranding. These were the principal prey. I was unable to see what was caught at Terre Rouge.

Table 1 summarises data on strikes for food and reveals that, whatever hunting method was used, about half the strikes were successful. Strike rates differed considerably according to the method of hunting adopted. The two most successful 'stalkers' made six successful strikes in two minutes and 19 in five minutes respectively

TABLE 1
Hunting methods and strike rates of Green Herons *Butorides striatus*, Mauritius, October 1993

Locality Method	Grand Gaube stalking	 standing on rocks	Terre Rouge standing in water
No. of birds observed	8	3	5
Total time of observations (mins.)	85	58	42
No. of strikes	94	5	2
Outcome of strikes			
successful	50	2	1
unknown	5	1	—
unsuccessful	39	2	1
Mins. per strike	0.9	11.6	21
Mins. per successful strike	1.7	29	42

whereas a group of five 'standing and waiting' at Terre Rouge made, between them, only one successful strike in 42 bird/minutes. Given the great abundance of prey at Grand Gaube, the high rate of capture is not unexpected. The much lower strike rate at Terre Rouge is surprising as the concentration of hunting herons suggested this was a favoured area.

The size of 47 prey items was recorded; 40 of these were estimated to be less than one quarter of the heron's bill length, five less than half the bill length, one greater than half and one about one and a half times the bill length. Brown *et al*. (1982, *Birds of Africa*, vol. 1) give the range of bill length for this species as 55–65 mm, and Cramp & Simmons (1977, *Birds of the Western Palearctic*, vol. 1) give a mean length of 60.7 mm for the African race *atricapillus*. These suggest that the bulk of the fish caught were less than 15 mm long and the largest about 90 mm. Most small prey was swallowed immediately but larger items usually mandibulated for a few seconds before being swallowed. The largest fish seen to be captured was carried away from the water as soon as it was caught and, although apparently dead within a few minutes of capture, was mandibulated constantly for 14 minutes before being swallowed.

I have not traced any references to size of prey or rates of hunting with which to compare these observations, but the sharply differing hunting rates seem worthy of note, as does the concentration of hunting birds at Terre Rouge in a species widely reported to hunt solitarily (e.g. Hancock & Elliott). Capture of prey large enough to take time to swallow may not be unusual as I have seen Grey Herons *Ardea cinerea* in Europe capture proportionately large prey which took some time to kill and swallow.

I am grateful to Linda Birch of the Alexander library, Oxford, for help with references and to James Hancock for commenting on a draft of this note

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P. J. Oliver

28 February 1994

FIRST RECORD OF CAPE GANNET *SULA CAPENSIS* FOR ARGENTINA

From September 1992 to May 1993, I studied Nearctic waders along the coast of San Antonio, Río Negro, Argentina, and also collected data on seabirds and waterfowl. On 7 November, at Banco Reparo, an extensive sandflat situated in the north of Patagonia (40°47′S, 64°57′W), I noticed a gannet which came flying over the sea from the south, at a distance of 200 m. Having had previous experience with Northern Gannets *Sula bassana* and Australian Gannets *S. serrator*, I readily recognised it as one of the larger *Sula* species. A second look with the aid of a telescope revealed that the bird had a black tail, black secondaries and yellowish head. I therefore identified the bird as an adult Cape Gannet *S. capensis*. When the gannet approached close to the shore, a group of roosting South American Terns *Sterna hirundinacea* was disturbed several times. After 30 minutes if flew in a southwesterly direction along the coast. Five days later, I again discovered an adult Cape Gannet (possibly the same bird) at a high-tide roost among *c*. 30 Kelp Gulls *Larus dominicanus* on the beach of Los Alamos, *c*. 10 km southwest of Banco Reparo. It was preening and did not give the impression of being exhausted.

The Cape Gannet breeds on islands off southwest Africa. Outside the breeding season it migrates in the South Atlantic as far north as the Gulf of Guinea and in the Indian Ocean north to Mozambique (Crawford *et al*. 1983, *S. Afr. J. Mar. Sci*. 1: 153–174). Possibly small numbers reach the North Atlantic, although there is disagreement whether sightings of adults off European coasts are of Cape Gannets or abnormally plumaged Northern Gannets (Paterson & Riddiford 1990, *Br. Birds* 83: 519–526). This appears to be the first confirmed record of Cape Gannet for Argentina, as well as for S. America as a whole. So far, there were only two records of unidentified *S. serrator/capensis* off Brazil (Sick 1993, *Birds in Brazil: a natural history*). Furthermore, vagrant Cape Gannets have been recorded off Australia (Venn 1982, *Victorian Nat*. 99: 56–58).

I wish to thank C. J. Hazevoet for commenting on an earlier draft of this note.

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PATRICK Y. BERGKAMP

18 March 1994

MOTTLED PETREL *PTERODROMA INEXPECTATA* OFF TIERRA DEL FUEGO

The Mottled Petrel apparently occurred regularly off Tierra del Fuego prior to the heavy decline during the last centuries. Harrison (1985, *Seabirds, an identification guide*) states that no records are available from these waters since 1848, but that non-breeding immatures are likely still to occur occasionally.

That this was a reasonable assumption was confirmed by an observation of one individual at *c.* 55°45′S, 65°30′W, i.e. *c.* 130 nautical miles SSE of Cape Horn, on 18 December 1993. The bird stayed for a few minutes together with the Cape Petrels *Daption capense* flying around M/S *Academic Sergey Vavilov*, bound for Antarctica. The diagnostic black diagonal underwing and overwing stripes, dark face patterns and dark grey belly patch were evident.

The only other recent record of this species in the easternmost Pacific was of "several" individuals off Valparaiso de Chile on 18 and 19 September 1964 (Szijj 1967, *Auk* 84: 366–378). However, the fact that these birds were observed "almost in sight of the Chilean coast", more than 1000 nautical miles from any other record of *Pterodroma inexpectata* and in the early austral spring, suggests that they may have been misidentified individuals of locally breeding Stejneger's Petrels *Pterodroma longirostris* or White-necked Petrels *Pterodroma externa*.

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HANS MELTOFTE
CLAUS HORNEMAN

13 April 1994

BOOKS RECEIVED

Cramp, S. & Perrins, C. M. 1994. *The Birds of the Western Palearctic*. Vols. 8 & 9. Pp. 899 & 488, 61 & 34 colour plates, distribution maps and text-figs. ISBN 0-19-854679-3 & 0-19-854843-5. Oxford University Press. £95.00 & £85.00.

The completion of this vast work marks a milestone in ornithological publication in this country. The earlier volumes are so well known that it is unnecessary to say more than that these last two maintain the same standard, especially in the completeness of their coverage of the literature, which grows at such a rate that what was originally planned as a single final volume had to be split into two. The quality of the plates is also outstanding, especially those of the finches by Hilary Burns and Chris Rose in volume 8 and of the buntings by Trevor Boyer and Ian Lewington in volume 9.

It seems to have been accepted that complete and fully updated new editions will never be practicable in the years to come. Instead, the Oxford University Press plans to publish a quarterly journal, *The BWP Journal*, probably starting in 1996, which will act as a kind of supplement to *BWP*, reporting new research on the status, ecology, behaviour etc. of west Palearctic birds. Those who are interested in receiving a free copy of the first issue are invited to write to Melinda Palmer, Journals Marketing, O.U.P., Walton St., Oxford OX2 6DP.

The publishers are also offering advantageous terms for the purchase of all nine volumes of *BWP*, on an interest-free instalment plan: first payment £200, to be followed by three further payments of £150 each (inclusive of packing and postage). Orders can be made by telephoning 01536-454534.

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Correspondence about Club Meetings and on all other matters should go to the Hon. Secretary, Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K.

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

ISSN 0007-1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 115 No. 2 June 1995

FORTHCOMING MEETINGS

Tuesday, 18 July 1995. Mr David Fisher will speak on **"Birds of Mongolia".** David Fisher will be well known to members; he has led ornithological tours to many countries of the world and has a wide knowledge of the birds of all five continents.

Those wishing to attend are asked to notify the Hon. Treasurer by Tuesday, 4 July 1995.*

Tuesday 19 September 1995. Mr Robert Medland will present an overview of the birds of Malawi. Until last year Mr Medland lived in Malawi, where he was a surveyor. During his 10 years in that country he was a very active ornithologist doing research into bird distribution and migration and also a programme of bird ringing for 4 years. He was Chairman of the Wildlife Society there and Records Editor of *Nyala*.

Those wishing to attend are asked to notify the Hon. Treasurer by Tuesday, 5 September 1995.*

Tuesday, 14 November 1995. Dr T. J. Roberts will speak on **"The birds of the Himalaya".**

Tuesday, 12 December 1995. Mr Rod Martins will speak on **"The birds of Socotra".**

**Late acceptances and cancellations can usually be taken up to the Thursday preceding a meeting.*

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London at 6.15 p.m. for 7 p.m. A map showing Imperial College will be sent to members on request.

Overseas Members visiting Britain are particularly welcome at meetings. Details can be obtained from the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB. Telephone (01572) 722788.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 115 No. 2 Published 30 June 1995

The eight hundred and forty-seventh meeting of the Club was held in the Ante-room of the Sherfield Building at Imperial College on Tuesday 17 January 1995, at 6.15 p.m. 29 members and 10 guests attended.

Members attending were: D. Griffin (*Chairman*), M. A. Adcock, Miss H. Baker, P. J. Belman, I. R. Bishop, Mrs D. Bradley, Dr K. B. Briggs, D. R. Calder, Professor R. J. Chandler, Dr R. A. Cheke, Dr L. Cornwallis, S. J. Farnsworth, A. Gibbs, The Reverend T. W. Gladwin, C. A. R. Helm, Ms R-M. Jones, R. H. Kettle, Dr C. F. Mann, D. J. Montier, Mrs A. M. Moore, R. G. Morgan, S. Parry, R. E. F. Peal, Dr R. Prŷs-Jones, P. Salaman, R. G. Scott, P. J. Sellar, N. H. F. Stone, M. P. Walters.

Guests attending were: Dr D. T. Parkin (*Speaker*) Mrs G. Bonham, Mrs F. Farnsworth, Mrs B. Gibbs, Mrs J. Gladwin, Mrs M. Montier, P. J. Moore, Miss C. Parkin, Mrs B. Peal, Dr D. Russell.

After supper Dr David Parkin spoke on "Recent Developments in the Forensic Investigation of Birds of Prey". He has sent the following abstract of his talk.

Every year, the eggs of many protected species of birds of prey are illegally taken from the wild and laundered through false claims of captive breeding. In order to prevent this trade, an accurate test of parentage is required. The success of DNA fingerprinting and profiling in humans prompted the development of a genetic profiling system for the forensic identification of parentage in birds of prey. A number of highly variable minisatellite loci have been cloned from raptors which, in combination, can be used to produce an individual specific genetic profile. The very high degree of polymorphism which is revealed ensures that only the true biological parents will possess the appropriate combination of alleles to reconstruct the profile of a young bird of suspect origin.

DNA profiling evidence was presented in court for the first time in a wildlife case to prove that a number of Peregrines and Goshawks were unrelated to the captive adults that were alleged to be their parents. It was shown that the number of mutations necessary for the observed profiles to conform with the claimed relationships was improbably large. The evidence was not contested and resulted in the imposition of a heavy fine.

DNA profiling of birds of prey is capable of detecting false claims of parentage with a very high degree of certainty, and will play a major role in deterring the theft of such birds from the wild. It could also form the basis of a 'molecular registration scheme' that could eliminate much of the illegal traffic in birds of prey. Future developments are planned that could extend this scheme to the use of individual feathers rather than blood samples. This would eliminate the need for a trained veterinarian when the tissue samples were taken, and could permit the confirmation of parentage and identity from wild birds without the need to trap the adults.

The eight hundred and forty-eighth meeting of the Club was held in the Senior Common Room of the Sherfield Building at Imperial College on Tuesday 21 March 1995, at 6.15 p.m. 34 Members and 22 Guests attended.

Members attending were: D. Griffin (*Chairman*), M. A. Adcock, Miss H. Baker, P. J. Belman, K. Betton, I. R. Bishop, Dr K. B. Briggs, P. J. Bull, D. R. Calder, Cdr M. B. Casement RN, Dr R. A. Cheke, Dr R. A. Cox, S. J. Farnsworth, A. Gibbs, The Reverend T. W. Gladwin, C. A. R. Helm, R. H. Kettle, I. T. Lewis, Dr C. F. Mann, Dr J. F. Monk, D. J. Montier, Mrs A. M. Moore, R. G. Morgan, Mrs M. Muller, P. J. Oliver, R. E. F. Peal, R. C. Price, Dr R. Prŷs-Jones, Dr C. Ryall, P. J. Sellar, Dr D. W. Snow, N. H. F. Stone, C. Wheeler, Sir William Wilkinson.

Guests attending were: Professor Ian Newton, F.R.S. (*Speaker*), R. Allen, Mrs S. Baker, Mrs G. Bonham, Mrs J. Bull, Mrs J. Calder, Vice-Admiral Sir David Dobson, RN, M. P. Ellis, Mrs F. Farnsworth, Dr D. Foskett, Mrs B. Gibbs, Mrs J. Gladwin, G. A. James, Mrs S. Lewis, Dr H. Liversidge, B. Marsh, Mrs M. Montier, P. J. Moore, B. O'Brien, M. Paling, N. Peace, Mrs H. Price, D. Tayler, J. Wilson.

After supper Professor Ian Newton spoke on "Lifetime Reproduction in Sparrowhawks". A summary of his talk is published below.

As a result of a long-term study of marked individuals, lifetime fledgling productions were recorded for more than 200 Sparrowhawks *Accipiter nisus*, which made at least one nesting attempt. These females were representative, in their respective lifespans, of the female breeding population as a whole. They produced between 0 and 24 young during their lives, depending on age of first breeding, lifespan and the success of individual breeding attempts. Both reproductive success and survival chances changed during the lifespan of individual Sparrowhawks, first rising as birds gained in experience and status, and then declining as senescence took hold.

In each generation of Sparrowhawks, about 72% of individuals died before they could breed, another 6% bred unsuccessfully, and only 22% produced young, but in greatly varying numbers. About 5% of the most productive individuals in one generation produced half the young in the next, a pattern which was repeated in each successive generation. Similar patterns occur in other bird species and result inevitably from life history features, including patterns of reproduction and mortality.

Measures of lifetime reproductive success are useful in life history theory because (1) they combine the two key measures of individual performance (survival and success at individual breeding attempts) into a single overall measure of performance, and because (2) only lifetime measures can reveal the full extent of individual variation in reproductive success.

A new species of *Puffinus* shearwater from the western Indian Ocean

by Hadoram Shirihai, Ian Sinclair & Peter R. Colston

Received 3 February 1995

A small *Puffinus* shearwater that was found alive on a beach at Durban on the east coast of South Africa on 20 January 1987, but died shortly after, was considered to be indeterminate in certain characters (Berruti 1990). This specimen was presented to the Durban Museum where it was also examined in detail by IS. In September 1994 it was sent on loan to The Natural History Museum, formerly the British Museum (Natural History) (BM (NH)), Tring, where PRC and HS were able to compare it with a wide range of specimens of both Audubon's Shearwater *P. lherminieri* and Little Shearwater *P. assimilis*. While doing so, we located a further specimen in the BM (NH) skin collection (see below) which visual and x-ray study showed closely to match the Durban specimen in plumage and structure as well as differing from all other specimens.

Besides the two specimens mentioned above, IS took photographs of an apparent adult of this form captured on Durban beach in August 1981 (but prematurely released without measurements), and HS had good views and took photographs of another individual at Eilat, Israel, between 18 and 21 June 1992. There is also an earlier observation by IS of a similar bird watched close inshore for an extended period at Richard's Bay, South Africa (28°47′S, 32°05′E) on 20 February 1976 (Shirihai & Sinclair 1994). We are convinced that we are not dealing with aberrant individuals since what is apparently this form has been found to be locally abundant in the western Indian Ocean (Shirihai & Sinclair 1994). Between January 1990 and January 1993, IS observed many such individuals seemingly identical to the above mentioned specimens. These birds occurred both south and north of the Comoro Islands, west and south of Aldabra (Seychelles), in the Mozambique Channel (including around the Bassas da India atoll), and east of Maputo, Mozambique (see Table 1). In these areas, they were easily recognised at sea by their larger size (compared with Little Shearwater), and very black-and-white appearance with white undertail coverts, reminiscent of Manx Shearwater *P. puffinus*, but smaller and with much quicker wing-beats.

We appreciate that the taxonomy of the small and medium-sized shearwaters is still full of uncertainties; but this distinctive form cannot, on present evidence, be assigned to and treated as a subspecies of any known form. We therefore consider that it should be treated as a new species, for which we propose the name

Puffinus atrodorsalis sp. nov.

Holotype. Adult, unsexed, found alive on the beach, Durban, South Africa (29°53′S, 31°00′E), 20 January 1987 (died shortly after).

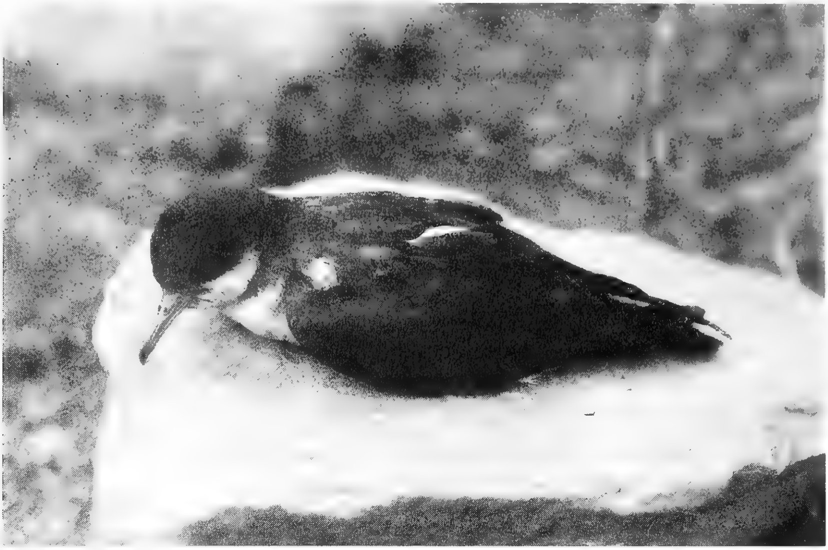

Figure 1. *Puffinus atrodorsalis* sp. nov. Durban, South Africa, August 1981. (Photograph: Ian Sinclair.)

Freeze-dried specimen lodged in the Durban Natural Science Museum, DNSM No. 36093.

Diagnosis. Medium-sized shearwater with characteristic black-and-white plumage and distinctive, hooded appearance of head. Relatively long wings and tail, as well as bill, approaching *P. puffinus* in proportions, but in length distinctly smaller (i.e. overall size *c*. 15% smaller), and in this respect closer to the *assimilis/lherminieri* complex (*c*. 5% larger). Similar bare part colouration to *assimilis* (see below), but differs in its larger size, longer wing, tail, and bill (see Appendix), and lack of predominantly white remiges below and variable whitish or pale extensions around the eye. Differs from *lherminieri* in lacking a predominantly brown hue to the upperparts and undertail coverts; also lacks that species' well-developed nasal tubes and maxillary unguis, and has bluish-grey, not fleshy-pink, legs. In view of the considerable size difference, we consider that there is no further need to discuss *P. puffinus* and its closely related forms (*auricularis, gavia, huttoni, nativitatis, opisthomelas, yelkouan*).

Description of type. Uniformly saturated blackish dorsally; black crown extends to just below the eye and is sharply demarcated. A small, indistinct diffuse area (greyish-white mottling) mainly on lower ear-coverts and indistinctly behind, also some whitish feathering on upper eye crescent and a conspicuous black loral patch. Within the otherwise uniformly black upperparts (head to rectrices, also entire upper wing), there are only some narrow, indistinct, diffuse (fresh) whitish tips to the greater coverts. Otherwise, the obvious demarcation

Plate 1. Top, *Puffinus atrodorsalis* holotype; DNSM no. 36093, adult, Durban, South Africa, 20 January 1987. Middle, *P. atrodorsalis*; BMNH no. 1866.7.21.10, juvenile, Réunion. Bottom, *P. lherminieri bailloni*; BMNH no. 1969.5.1, adult, Réunion. Note heavier bill and darker, more extensive pectoral patches than in *atrodorsalis*.

TABLE 1
Sight records corresponding to *Puffinus atrodorsalis* in the western Indian Ocean, made by I.S.

Position	Co-ordinates	Date	No. of birds
		1990	
80 km NW of Nosy Bé, Madagascar	12.50′S, 47.40′E	2 Jan	10
90 km NE of Mayotte, Comoro Is.	12.00′S, 45.50′E	4 Jan	14
5 km S. of Aldabra Is. (Seychelles)	9.22′S, 46.28′E	5 Jan	4
180 km NE of Aldabra Is. (Seychelles)	8.10′S, 47.30′E	7 Jan	3
		1991	
80 km NE of Vohimarina, Madagascar	13.22′S, 50.00′E	12 May	8–10
40 km NE of Antseranana [Diego-Suarez], Madagascar	12.19′S, 49.17′E	14 May	4
150 km NE of Nosey Bé, Madagascar	12.30′S, 47.10′E	18 May	12
50 km S of Grand Comoro	12.25′S, 43.30′E	20 May	40–50
60 km W of Grand Comoro	11.45′S, 42.52′E	22 May	6
90 km E of Mombasa, Kenya	4.04′S, 40.30′E	29 May	2
500 km E of Mombasa, Kenya	4.04′S, 44.15′E	2 Jun	6–10
120 km NE of Aldabra Is. (Seychelles)	8.50′S, 47.10′E	9 Jun	30–40
50 km SW of Aldabra Is. (Seychelles)	9.22′S, 46.28′E	11 Jun	15–20
100 km NE of Mayotte. Comoro Is.	12.00′S, 46.00′E	10 Jun	20–30
20 km S of Grand Comoro	12.10′S, 43.45′E	14 Jun	3
190 km NE of Tolanaro [Fort Dauphin], Madagascar	24.00′S, 48.12′E	28 Aug	5
330 km NE of Madagascar	9.45′S, 51.15′E	29 Aug	9
180 km NE of Durban, South Africa	29.10′S, 32.30′E	5 Dec	2
Bassas da India Atoll, Mozambique Channel	21.15′S, 39.45′E	7 Dec	4
100 km SW of Nosy Bé, Madagascar	13.40′S, 47.20′E	8 Dec	3
200 km SW of Mauritius	21.45′S, 55.50′E	22 Dec	4
150 km SE of Réunion Is.	22.15′S, 56.50′E	27 Dec	10
		1992	
80 km NE of Maputo, Mozambique	25.40′S, 33.25′E	18 Dec	2
100 km E of Maputo, Mozambique	25.58′S, 33.10′E	20 Dec	4
		1993	
100 km ENE of Maputo, Mozambique	25.40′S, 33.40′E	20 Jan	3

between the black upperparts and white underparts is only broken by a small amount of blackish-brown mottling to the sides of the neck/breast. The foreneck, throat, breast and flanks are unmarked white, separated from the white undertail coverts by a partial blackish-brown divide, formed by a lateral extension or notch of dark feathering which extends narrowly down from the rump and on to the thigh. Also, the white undertail coverts show some inconspicuous, diffuse greyish mottling (*c.* 2–3.5 mm wide) on the outer webs of the longest outer coverts (in the field undertail coverts appear wholly white). The underwing coverts are unmarked pure white, narrowly framed with blackish-brown on the leading edge of the wing; the remiges are mostly dusky-grey to blackish, with indistinctly lighter or whiter shades to the basal outer webs of the outer primaries; axillaries white.

Bare parts. Bill proportionally relatively long (i.e. relatively longer than *assimilis*) and typically slender with poorly developed nasal tubes and maxillary unguis, bluish-grey with blackish shade on culmen ridge. Legs (colours recorded when alive): inner tarsus, two inner toes and webs bluish-grey (top half of outer tarsus on specimen appears similarly pale), remainder of legs and feet black.

Measurements of holotype (mm). Wing 204.5 (maximum chord); tail 78; bill 28 (culmen from feathers), 34 (from skull), 20.5 (from anterior nostril to bill tip); tarsus 40.

Measurements of other individuals (mm). Juvenile at point of fledging, male, undated, L'île de la Réunion, BM (NH) reg. no. 1866. 7. 21. 10, purchased from Maison Verreaux. Wing 162 (visible primaries 7–10 growing), tail 74 (very abraded), bill 28.5 (culmen from feathers), 35 (from skull), tarsus 39. Resembles holotype (including similar shape/pattern of dark and light areas of bill/legs), but upperparts differ in duller blackish-brown appearance. The advanced stage of juvenile plumage suggests collection on or near the breeding area.

English name. We suggest Mascarene Shearwater, after the oceanic Mascarene ridge which may form part of the breeding range.

Additional characters (from similar, live birds). Although Audubon's and Little Shearwaters are superficially rather similar to our new species in plumage, there are also important differences in structure, proportions and movement. On the water and in flight, *atrodorsalis* appears intermediate between Manx (but obviously distinctly smaller) and Little (races *assimilis, baroli, tunneyi*, but obviously larger than these). In size, it may approach the Southern Oceans race *elegans* of the Little Shearwater, but its general appearance is slimmer (i.e. proportionally more slender-billed, longer-winged and longer-tailed), and it has the more black and white appearance of the Manx Shearwater. The flight action is also intermediate: in calm weather it flies with rapid, almost whirring shallow wing-beats (although not as fast as Little), interspersed with frequent glides and shears, fairly close to the surface (even in a wind-force of 2–4); in stronger winds it arches higher, but its travelling flight is rarely as powerful or sustained as Manx.

Individual variation. The few specimens that we have been able to examine in the hand or observe closely in the field show that there is a small amount of individual variation; e.g. the pectoral patches (the dark feathers running down the neck sides) are moderately developed and rather distinct in the Eilat bird and the Réunion specimen, but are smaller in the bird captured in Durban in 1981 and poorly developed in the Durban specimens of 1987. The demarcation of the hood below the eye also varies; it is clear cut in the 1987 Durban individual, moderately so in the 1981 individual and the Réunion specimen, and somewhat ill-defined in the Eilat individual. The lack of sharpness in the latter was discussed in Shirihai & Sinclair (1994) and attributed to the bird's active body moult.

Relationships and recognition (see also Appendix). *Atrodorsalis* differs markedly from the North Atlantic race *baroli* of Little Shearwater (also Australasian races: nominate *assimilis* and *tunneyi*) in being larger with relatively longer and more slender bill, dorsally blacker and lacking prominent white extensions over the eye (most noticeable in *baroli*). It more closely resembles the large races of Little including *elegans* (widespread in Southern Oceans), *haurakiensis* (islets off east coast of North Island, New Zealand), and *kermadecensis* (Kermadec group), but differs in having a proportionally longer, more slender bill and in lacking extensive pale feather tips and/or darker subterminal markings to its predominantly black (rather than greyish-black) upperparts. These larger races of *assimilis* also show a diffuse, whitish or pale area around the eye and ear-coverts and lack the distinctive black-hooded appearance typically shown by *atrodorsalis*. All the above mentioned races of *assimilis* (as well as race *myrtae*, Rapa Is.) have diagnostically white instead of dusky-grey undersides to their remiges (at least on much of the inner webs) and usually show more pronounced white-tipped greater coverts. *Atrodorsalis* also differs from the controversial *boydi* of Cape Verde Is., which different authorities refer to *P. assimilis* (Cramp & Simmons 1977) or to *P. lherminieri* (Murphy 1927, Jouanin & Mougin 1979). Although *boydi* shares similarly coloured greyish-blue legs/feet and dusky-grey remiges, it differs from *atrodorsalis* in having mainly dull brown undertail coverts (instead of white), slightly more blackish-brown upperparts, paler or whitish mottling around the eye and upper ear-coverts, and partially white lores (nearer *assimilis*), as well as smaller size, and a shorter bill like most small/medium-sized races of Little Shearwater (see below).

Proportionally, *atrodorsalis* resembles some races of Audubon's rather than Little by its longer-billed appearance, and longer and more pointed wings/tail, but it differs from *nicolae*, the most widely distributed race of Aubudon's in the Indian Ocean, in lacking the brown upperparts, brown undertail coverts and prominent pectoral patches as well as in its slightly larger size (see Appendix); *nicolae* also has a broader bill with strongly developed nasal tubes and maxillary unguis, and flesh-pink legs. With *bailloni* (Mascarene Is.), *atrodorsalis* shares white undertail covers, but otherwise differs as described above for *nicolae*. Furthermore, *atrodorsalis* is distinctly different from all races of Audubon's found in the Western Atlantic (nominate *lherminieri*, *loyemilleri*) and Pacific (*bannermani, dichrous, polynesiae, gunax, heinrothi, subalaris*), in lacking their distinctly browner upperparts, variably brown undertail covers, longer and stronger bill, flesh-pink legs, and more variegated underwing coverts (more widely framed by brown, with varying amount of brownish-grey on underwing coverts and axillaries). The single known individual of the recently described *temptator*, from Moheli, Comoro Islands (Louette & Herremans 1985), which we have not examined, differs strikingly in its more obvious dusky underwing and appears similar to other Audubon's races. All other allied forms of smallish/medium-sized shearwaters, including Persian Shearwater *P. (l.) persicus* (sometimes considered separate from Audubon's), were considered, but none resembled *atrodorsalis*.

BM (NH) specimens examined:

Puffinus assimilis: baroli (22), *boydi* (18), *assimilis* (13), *tunneyi* (6), *kermadecensis* (7), *haurakiensis* (1), *elegans* (9), *myrtae* (type only).

Puffinus lherminieri: lherminieri (12), *loyemilleri* (1), *subalaris* (9), *dichrous* (4), *polynesiae* (9), *gunax* (1), *heinrothi* (none), *bannermani* (1), *bailloni* (2), *nicolae* (17), *persicus* (5, including type), *temptator* (none).

Larger *Puffinus* spp.: *puffinus* (60), *yelkouan* (50), *gavia* (13), *huttoni* (2).

Cautionary and taxonomic note

Sorting out the taxonomy of the *Puffinus assimilis/lherminieri* complex is one of the most challenging problems in avian taxonomy. Following the guidelines of LeCroy & Vuilleumier (1992), the recognition of the new species, *P. atrodorsalis*, first required a thorough examination of this complex in museum skins and in the literature, e.g. Murphy (1927), Bourne (1959), Palmer (1962), Vaurie (1965), Jouanin (1970), Harrison (1983), Louette & Herremans (1985) and Marchant & Higgins (1990). Our resulting tentative assessment of the relationships between the taxa revealed an obvious requirement for a thorough revision of these smaller shearwaters, almost certainly involving some lumping and splitting both specifically and subspecifically. We consider treatments of the complex thus far to have been largely a matter of intuition by various authors, with the 18 or so forms seemingly being divided arbitrarily between the two species. Most authors use the following criteria for specific separation:

> Little Shearwater *P. assimilis*—blackish or greyish-black upperparts, white undertail coverts, relatively shorter wings and shorter tail, largely white inner webs to the primaries and blue-grey legs.
>
> Audubon's Shearwater *P. lherminieri*—brownish upperparts, usually dark undertail coverts, longer wings and longer tail, darker inner webs to the primaries, flesh-pink legs, and lack of paler/more diffuse or whiter areas around the eye (common in *P. assimilis*).

The above characters hold for the most representative forms of each species but there is more variability than might be expected. For example, the Indian Ocean race *bailloni* (usually included in Audubon's) has extensive white undertail coverts instead of brown, while *boydi* (usually placed in Little) has brown undertail coverts. The latter's relationship with the race *baroli* (Madeiran Little) is probably as remote as between the various (but variable) populations of *assimilis* and *lherminieri* (Murphy 1927), as *boydi* also has dark grey remiges similar to Audubon's, but structurally and in the rest of its plumage and bare part colouration it is essentially a Little (see below). The same applies to the upper surface colouration of some so-called Audubon's forms that have more blackish-brown upperparts (e.g. *gunax*) and some of the southern representative races of Little which have rather more bluish-grey upperparts instead of black (e.g. *elegans*).

From our studies of the specimens available at The Natural History Museum, Tring, we conclude that a taxonomy solely based on the limited morphological characters (e.g. plumage colouration, wing formula and the usual biometrics of wing, tail etc.) used at present, is inadequate and that additional external characters should be considered, e.g. bill structure (i.e. degree of development/volume/shape of nasal tubes and maxillary unguis and perhaps other characters), body/wing/tail proportions, etc. Attention should also be given to internal anatomy, differences in marine biotope, eco-biology and phenology. However, the easiest route at present in helping to solve the problem may be through DNA studies.

According to the specimens that we have examined thus far, the complex is apparently best divided into about 8 species:

P. atrodorsalis. The breeding grounds of the species seem likely to be in the southwest Indian Ocean, possibly around the Comoro Is. where numbers have been found in the season when other petrels have been reported breeding; the occurrence of a fledged juvenile from Réunion may also be relevant. Characters as detailed above.

P. assimilis. Three groups: northeast Atlantic (*baroli, boydi*); southwest Pacific/New Zealand/Southern Ocean (*elegans, kermadecensis, haurakiensis, myrtae*); Australia, Lord Howe & Norfolk Is. (*tunneyi, assimilis*). General characters as detailed above. These three groups are distinct from one another morphologically and/or geographically and merit further investigation into their status and relationships; *boydi* perhaps should be treated on its own.

P. lherminieri. West-central Atlantic (*lherminieri, loyemilleri*) and across central Pacific Ocean (*subalaris, dichrous, polynesiae*). General characters as detailed above.

P. (l.) nicolae. West Indian Ocean (*nicolae, bailloni*). Characterised by darker/warm sooty-brown upperparts, large conspicuous pectoral patches, whiter underwing coverts, and markedly robust bill with well developed nasal tubes and maxillary unguis.

P. (l.) gunax. Locally in west-central Pacific (New Hebrides), monotypic. Characterised by large size, deep sooty-black upperparts (often lightly edged pale, more so on greater coverts forming distinct wing-bar), light area around ear-coverts and distinctly long, slender bill. This population is distinctive but little material is available.

P. bannermani. Locally in northwest Pacific (Bonin & Volcano Is.), monotypic. Characterised by distinctive greyish collar; otherwise reminiscent of *gunax*, and may be conspecific.

P. heinrothi. New Britain (west Pacific Ocean), monotypic. Characterised by wholly dark appearance, and has been recorded as having blue-grey eyes.

P. persicus. Northern Indian Ocean, monotypic. Characterised by predominantly light brown upperparts, variegated underwing coverts and axillaries, large size and slender bill.

Vaurie (1965) proposed *bannermani* and Harrison (1983) suggested *heinrothi* as full species, and these two taxa together with *persicus* are separated by Sibley & Monroe (1990) and Hoyo (1992). The form *temptator* (Comoro Is., Indian Ocean), known only from the type specimen, is apparently rather distinct but strongly resembles Audubon's of the Pacific and west-central Atlantic Oceans (so may indicate worldwide distribution of Audubon's), although somewhat agreeing with *persicus* in plumage (pending further study). Palmer (1962) and Jouanin & Mougin (1979) suggest that the status of birds from Ascension Is. and probably the Gulf of Guinea (C. and E. Atlantic Ocean), also Amsterdam and St. Paul Is. (S. Indian Ocean), is uncertain and that they may contain undescribed taxa; but other recent South Atlantic records may suggest differently (see below).

Other subtle forms (e.g. *munda, kempi*), already synonymised by various recent authors (e.g. Jouanin & Mougin 1979), are not treated here because we agree with their decisions. Presumed breeding birds from the southeast Pacific (e.g. Chiloe Is., Juan Fernandez Is.) are invariably assigned to Little, possibly closely related to the Australian and/or New Zealand groups, but there is a paucity of information on these (Fleming & Serventy 1943, Jehl 1973, Harrison 1983).

The above polytypic species listed above all share several characters that vary within the group involved, perhaps because of common ancestry, primarily the colour of the undertail coverts, under remiges, and upperparts. Thus in *P. (l.) nicolae*, most populations have brown undertail coverts whereas *bailloni* has white, and vice versa in *P. assimilis* with regard to *boydi*. However, all the species proposed, monotypic or polytypic, have developed their own distinctive features of body/wing/tail proportions, bill structure, plumage colouration (upperparts and underwing coverts) and bare parts. For excample, *P. bannermani* has a distinctive ash-grey collar and contrasting blackish-brown mantle. In this welter of forms, we consider that *P. atrodorsalis* clearly stands out as a distinct species due to its unique Manx-like plumage (including head pattern) and body/wing/tail proportions (but not overall size), and in having a combination of other characters (dark remiges, white undertail coverts, long and slender bill) that is not shared by, and on present evidence prevents it from being linked with, any other form.

Additional information

Another indeterminate shearwater described by Berruti (1990) was a specimen from Transvaal Museum, TM 74351, which had been collected on 15 September 1988 in the Kruger National Park, South Africa. It was sent on loan to the BM (NH) and we determined it to be a Little Shearwater of the race *boydi*, apparently the first of this subspecies to reach southern Africa (Sinclair *et al*. 1982). It is small in size (wing 181; tail 74; bill 25.3 (exposed culmen), 34.3 mm (to skull), 19.1 mm (anterior nostril to bill tip); tarsus 37 mm), and its plumage characters are as follows: slaty-blackish above, diffuse white area around the eye, bluish-grey bare parts as Little but having dark undertail coverts. Another apparent *boydi*, also recorded far south of its breeding range (Cape Verde Is.), was measured and released on St Helena in the South Atlantic in February 1975 (Bourne & Loveridge 1978). These *boydi* records, and the single record of *P. l. bailloni* from East London, South Africa (Courtenay-Latimer 1953), show that these small shearwaters are capable of long-distance vagrancy, caused presumably by an individual becoming lost or disorientated and then becoming involved with movements of other migrant species of shearwaters (Harrison 1983).

Acknowledgements

The authors wish to acknowledge the assistance given to them by the staff of the BM (NH), Tring: Mark Adams, Dr Robert Prŷs-Jones, Michael Walters and Mrs F. E. Warr, also Dr A. G. Knox and Dr D. W. Snow for advice and encouragement. We are indebted to the staff of both the Durban and Transvaal Museums for promptly sending us a loan of the two specimens. We should also like to thank Richard Brooke, Miguel McMinn Grivé, Christian Jouanin, Jon King, Terry Oatley, Storrs Olson, Carl Vernon, Cyril Walker, and Graham Wragg for their opinions and help. Oliver Crimmen (BM (NH), London) was instrumental in producing x-rays of various skin and spirit specimens for which we are exceedingly grateful. Peter Hayman was exceedingly helpful in preparing scale drawings of the new species of shearwater, also scale drawings (from skin/spirit specimens) of Audubon's, Little and Persian Shearwaters which were invaluable in our discussions. HS particularly thanks Rehovot Tours, the International Birding Centre Eilat, the Society for the Protection of Nature in Israel, Amir Ben-Dov, Ehud Dovrat and Eli Shirihai who have sponsored various aspects of this study, most especially the cost of travelling from Israel to the U.K. and other expenses. Finally HS acknowledges considerable help from John Morgan, starting with their joint observation of the Eilat bird, through subsequent discussion and publication, and finally for word-processing and editing the manuscript in its earlier stages.

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APPENDIX

Measurements (in mm) of *Puffinus assimilis* and *P. lherminieri* subspp., and *P. atrodorsalis* sp.nov.

Sex	*n*	Wing	Tail	Bill		Tarsus	Source
				exposed culmen	from skull		
Puffinus assimilis baroli (Azores, Madeira, Canary Islands)							
M	5	176–187 (181.0, 4.5)	66–72 (69.2, 2.38)	25–28.5 (26.4, 1.5)	31–33.5 (31.7, 1.1)	36–39 (37.2, 1.1)	1
F	5	168–182 (176.8, 5.26)	67–77 (71.8, 4.15)	24–26 (25.0, 0.84)	29–31 (29.8, 0.83)	35–38 (36.5, 1.14)	1
Puffinus assimilis tunneyi (SW Australia)							
M	6	176–182 (177.7, 2.16)	65–70 (67.3, 2.07)	22.6–25 (23.7, 0.79)	—	36.8–38.4 (37.5, 0.57)	2
F	8	171–179 (174.6, 2.78)	62–68 (65.5, 2.34)	21.9–24.6 (23.5, 0.84)	—	34.8–38.6 (36.7, 1.08)	2
O	6	163–181 (169.8, 7.65)	65–75 (67.3, 5.35)	23–25 (23.7, 0.75)	29–31 (30.5, 0.83)	34–38 (36.2, 1.48)	1
Puffinus assimilis assimilis (Lord Howe & Norfolk Is.)							
M	4	165–178 (172.8, 5.5)	65–71 (68.0, 2.6)	23.5–26 (24.9, 1.03)	30–32 (31.1, 0.85)	35–37.5 (36.1, 1.1)	1
F	5	171–188 (176.0, 7.3)	67–73 (69.0, 2.3)	22–25 (24.0, 1.27)	30–31 (30.6, 0.54)	35–39 (37.4, 1.55)	1
O	4	170–182 (176.75, 5.4)	64–68 (66.3, 1.7)	24–26.5 (25.0, 0.13)	29.5–33 (31.6, 1.5)	35–39 (36.5, 1.7)	1
Puffinus assimilis kermadecensis (Kermadec Is.)							
M	4	189–195 (192.8, 2.49)	68.5–72.5 (70.0, 1.66)	25–26.4 (25.6, 0.51)	—	39.1–41.6 (40.2, 1.04)	2
F	4	185–194.5 (190.3, 3.44)	69.5–71 (70.0, 0.61)	25.2–27.3 (26.0, 0.85)	—	39.6–42.1 (40.4, 1.25)	2
O	6	175–195 (186.5, 6.75)	62–68 (65.3, 2.94)	25–27 (25.8, 0.93)	29–32 (30.8, 1.32)	37–39 (38.2, 0.75)	1
Puffinus assimilis haurakiensis (NE New Zealand)							
O	16	181–200 (192.1, 5.81)	63–72 (69.3, 3.05)	23–29 (26.4, 1.45)	—	40–43 (40.9, 1.0)	2
F	1	191	74	26	31	40	1
Puffinus assimilis elegans (Breeds islands S. Atlantic & on Chatham Is. and Antipodes Is. etc.).							
O	7	184–198 (187.9, 5.46)	63–70 (66.0, 2.58)	25–26 (25.6, 0.5)	31–33.5 (32.5, 0.89)	39–41 (40.1, 0.9)	1
O	6	182–192 (188.0, 3.32)	(n=5) 61–71 (66.9, 3.54)	(n=7) 23.6–26 (24.5, 0.85)	—	(n=8) 39.2–42.2 (40.5, 1.12)	2
Puffinus assimilis myrtae (Rapa Is.)							
(Holotype)							
F	1	196	81	25	32	41	1

Continued

APPENDIX

Continued

				Bill			
Sex	*n*	Wing	Tail	exposed culmen	from skull	Tarsus	Source
Puffinus atrodorsalis sp. nov. (West Indian Ocean)							
O (Holotype)	juv	162	74 (very worn)	28.5	35	39	1
O	1	204.5	78	28	34	40	3
Puffinus lherminieri lherminieri (Bahamas, Bermuda, Tobago)							
M	5	200–204 (201.6, 1.8)	85–90 (87.6, 1.95)	29–31 (29.9, 0.9)	38–39.5 (38.7, 0.57)	40–42 (41.2, 0.83)	1
F	6	200–206 (203.0, 2.0)	86–94 (90.1, 3.1)	29–32 (30.3, 1.0)	38–39.5 (38.8, 0.5)	39–42.5 (40.4, 1.2)	1
O	26	200–216 (208.2)	82–94 (87.2)	26–32 (29.8)	—	39–43 (40.3)	4
Puffinus lherminieri loyemilleri (Caribbean coast of Panama)							
M	6	185–193 (188.0)	80.7–87.7 (85.2)	27.1–30.1 (29.3)	—	38.4–39.8 (39.3)	6
F	5	185–195 (190.0)	82.8–88.5 (86.3)	27.1–31.2 (29.2)	—	38.2–40.0. (39.0)	6
M	1	186	80	29	36	39	1
Puffinus lherminieri subalaris (Galapagos)							
M	4	188–203 (193.8, 6.9)	71–76 (72.9, 2.4)	26.5,– 29.5 (28.6, 1.4)	33–38 (35.9, 2.1)	37–38.5 (37.6, 0.75)	1
O	4	185–196 (189.5, 5.1)	71–73 (72.3, 0.9)	26.5–29 (27.5, 1.2)	33.5–35.5 (33.9, 1.2)	37–38.5 (37.6, 0.75)	1
M/F	10	189–203 (194.8)	68–75 (71.8)	24.7–29 (27.7)	—	34–37 (36.0)	4
Puffinus lherminieri dichrous (Breeds throughout central Pacific)							
M/F	17	188–209 (202)	73–84 (80.2)	22.6–27 (26.0)	—	36–40 (38.2)	4
O	5	187–203 (196.4, 2.45)	77–86 (80.6, 3.5)	27–28 (27.3, 0.44)	31.5–34 (32.75, 0.95)	36.5–38.5 (37.6, 0.74)	1
Puffinus lherminieri 'polynesiae' (Tahiti, Society Is.)							
M/F	26	188–212 (202.9)	75–84 (80.1)	25.5–30 (28.9)	—	37.5–41 (39.2)	4
O	4	201–209 (204.5, 3.32)	80–85 (82.5, 2.08)	27–28.5 (27.6, 0.75)	34.5–36 (27.9, 0.94)	39.0–41.5 (40.9, 0.94)	1
Puffinus lherminieri gunax (New Hebrides)							
M/F	5	207–213 (209)	73–77 (75.5)	29–31 (30.1)	—	41–43 (42)	5
O	1	195	73	29.5	36	42	1
Puffinus (lherminieri) bannermani (Bonin Is. & Volcano Is.)							
O	9	206–219 (212.6)	74–81 (77.5)	28–31 (29.5)	—	40–42 (41.3)	4
O	1	212	78	31	37	42	1

Puffinus lherminieri bailloni (Mascarene Is).							
M	1	207	76	30	37	43.5	1
F	1	198	79	28.5	37	41	1
O	27	195–213 (202.7–5.66)	67.5–82 (76.0, 3.4)	26–31 (28.7, 1.05)	—	37–42 (39.8, 0.98)	7
Puffinus lherminieri nicolae (Seychelles)							
M	1	190	73	26	35	38.5	1
F	2	191, 199	78 (2)	27, 27.5	33, 36.5	37, 39	1
O	4	190–197 (194.0, 4.69)	73–76 (74.0, 1.41)	26–28 (27.0, 0.81)	33.5–34 (33.87, 0.25)	38–38.5 (38.1, 0.25)	1
O	13	186–203 (192.7, 4.8)	70–77.5 (73.4, 2.44)	24–28 (26.1, 1.22)	—	35–39 (36.9, 1.34)	7
Puffinus lherminieri nicolae (Aldabra)							
M	3	194–200 (197.0, 3.0)	75–83 (78.7, 4.04)	26–29 (27.8, 1.6)	34.5–37 (35.5, 1.32)	37.5–41.5 (40.0, 2.18)	1
F	1	199	79	27	35	41	1
O	1	192	77	27.5	35	40.5	1
O	5	(*n*=3) 198–202	74–82 (78.2, 3.56)	26–28.5 (27.2, 0.91)	—	38–41 (39.6, 1.34)	7
Puffinus lherminieri nicolae (Maldives)							
M	2	197, 199	78, 80	27 (2)	34 (2)	40, 39	1
F	3	192–201 (195.7, 4.7)	76–79 (77.7, 1.5)	26–28 (27.0, 1.0)	34–35 (34.7, 0.58)	37.5–39 (38.3, 0.76)	1
O	5	191–203 (197.4, 4.39)	75–78 (76.2, 1.09)	26–28 (27.0, 1.0)	—	38–39 (38.8, 0.45)	7
Puffinus (lherminieri) persicus (Arabian Sea & N. Indian Ocean)							
O	5	185–213 (200.4, 10.09)	69–75 (72.6, 2.6)	32–34 (32.8, 0.83)	39–40 (38.8, 1.09)	38–40 (39.2, 0.83)	1
Puffinus lherminieri temptator (Moheli, Comoro Is.) (Holotype)							
M	1	>(203)	86	31	—	40.5	8
Puffinus (lherminieri) boydi (Cape Verde Is.)							
M	10	180–193 (187, 3.85)	71–80 (76.0, 3.68)	24.5–27 (25.5, 0.75)	32–34 (32.8, 0.75)	36–39 (37.4, 1.17)	1
F	7	181–193 (187.4, 4.8)	72–79 (76.3, 2.75)	25–27.5 (26.1, 0.89)	32–34 (32.7, 0.8)	36–38 (37.3, 0.75)	1

Notes. Measurements are range, mean and standard deviation. M=male; F=female; O=unsexed. Area and place names in parentheses indicate approximate range of subspecies, not necessarily where all specimens were collected.

Sources: 1, BM(NH) (maximum wing-length according to Svensson 1992); 2, Marchant & Higgins (1990); 3, Durban Natural Science Museum (measurements taken by PRC); 4, Murphy (1927); 5, Murphy (1928); 6, Wetmore (1959); 7, Jouanin (1970); 8, Louette & Herremans (1985).

A new species of *Phylloscartes* (Tyrannidae) from the mountains of southern Bahia, Brazil

by Luiz Pedreira Gonzaga & José Fernando Pacheco

Received 24 May 1994

Following an indication of D. Willis (verbally 1992) of recent discoveries by himself and other birdwatchers in the vicinity of Boa Nova, southern Bahia (see Forrester 1993), we took advantage of a planned trip to this locality to look for and survey remaining patches of Atlantic forest. Our surveys were undertaken between 30 August and 6 September 1992 and from 24 to 28 August 1993 (Gonzaga *et al.* in press).

What we found confirmed out initial suspicion that a very important area existed there that had gone virtually unnoticed by earlier workers: tiny remnants of a formerly extensive montane forest that occurred in this portion of Bahia, delineating at once the westernmost and the highest (1000–1100 m) elevational limits of the Atlantic forest domain in the region, known as the Serra da Ouricana. The humid Atlantic forest on the seaward slopes of this ridge gives way just a few kilometres to the west to the *mata-de-cipó* (semi-deciduous forest), best known to ornithologists for its endemic genus *Rhopornis* (see Collar *et al.* 1992: 679).

Among the 220 species recorded in this neglected habitat, 27 represent range extensions of several hundred kilometres, and several others were preceded only by single or a few old, disputed records from Bahia. In addition, a spinetail *Synallaxis* sp. and a tyrannulet *Phylloscartes* sp. that we tape-recorded and collected near Boa Nova proved to be undescribed taxa. The spinetail forms a clear link in both morphological and vocal characters between Rufous-capped Spinetail *S. ruficapilla* from the serras of the southeast and Plain Spinetail *S. infuscata* from the northeast (Gonzaga & Pacheco in prep.). The tyrannulet belongs in a group that includes the Mottle-cheeked Tyrannulet *P. v. ventralis* from the southeast and Long-tailed Tyrannulet *P. ceciliae* from the northeast. Here we describe this new *Phylloscartes*, as follows:

Phylloscartes beckeri sp. nov.

Holotype. Museu de Zoologia da Universidade de São Paulo (MZUSP) no. 73.706; male (skull not fully pneumatized, testes 6–7 mm) from 7 km southeast of Boa Nova, Bahia, eastern Brazil (14°23′20″S, 40°08′46″W), elevation 1000 m; collected 6 September 1992 by J.F.P., prepared as a skin by L.P.G.; no moult, plumage fresh.

Paratypes. MZUSP no. 73.707; female (skull not fully pneumatized, ovary 6 mm, with the ova and the oviduct minute), same location, date, and collectors; paired with the holotype; no moult, plumage fresh.

MZUSP no. 73.708; male (skull not fully pneumatized, testes 6 mm), same location, date, and collectors; no moult, plumage fresh.

MZUSP no. 73.709; male (skull not fully pneumatized, testes 3–5 mm), same location; collected 3 September 1992 and skinned by L.P.G.; no moult, plumage fresh.

Diagnosis—morphology. The placement of this new taxon in *Phylloscartes* is difficult to justify objectively, since the definition of this genus as it stands (e.g. Traylor 1979) is clearly unsatisfactory, as Graves (1988) has pointed out, and even the species that have been attributed to *Phylloscartes sensu stricto* may actually comprise a polyphyletic assemblage. No synapomorphy has so far been indicated to define this genus, which has been recognised by a combination of rather vague morphological and, especially in the past decade or so, behavioural characters instead. This notwithstanding, by its pattern of plumage colouration, proportions, and behaviour, *P. beckeri* clearly belongs in a group of species that includes *P. ventralis*, the type of *Phylloscartes* Cabanis and Heine.

From *P. ventralis* and the recently described Restinga Tyrannulet *P. kronei*, *P. beckeri* differs in colouration by having buff supraloral stripes and eye rings, rather than whitish or yellowish superciliary lines. Crown and nape in *P. beckeri* are distinctly darker, greyish-green, blending into a brighter green back, rather than nearly concolour with back as in those species. *P. kronei* is described (Willis & Oniki 1992) as having black tarsi and feet in life, while fresh specimens of *P. beckeri* had these parts pale grey, becoming brownish in dried skins. The wing markings (coverts, secondaries) are more pronounced in *P. beckeri* than in *P. ventralis*, owing to the darker background of the former's feathers. *P. beckeri* is further distinguished from *P. ventralis* by having the breast less olivaceous and the belly paler yellow.

P. beckeri is distinguished at once from *P. ceciliae* (Teixeira 1987a) by yellowish as opposed to whitish underparts, greyish crown, and lack of whitish superciliary stripes.

Diagnosis—voice. All these species (*P. beckeri, P. ventralis, P. kronei* and *P. ceciliae*) also differ from each other by vocal characters (see Vocalisations, below). The main feature of the song of *P. beckeri* is its variety of relatively weak notes, as compared to the songs of *P. ventralis* and *P. ceciliae*, which are simpler, more level-pitched sequences of repeated, louder notes.

Distribution. Known only from montane forest fragments around the type-locality. This is almost 700 km away from the nearest patches of montane Atlantic forest (in serras of eastern Minas Gerais and Espírito Santo) to the south, the nearest area where *P. ventralis* has been recorded, and half-way between these and forests in Alagoas to the northeast, where *P. ceciliae* occurs (Fig. 1).

Description of holotype. Upperparts Olive-Green (colour 47; capitalized colour names with numbers refer to closest colours in Smithe [1975, 1981]), crown feathers grey in centre. Base of upperparts feathers Dark Neutral Gray (colour 83). Narrow eye-rings and supraloral stripes Buff (colour 124). Short postocular superciliary lines Cream Color (colour 54). Narrow dusky lines through eyes. Auriculars

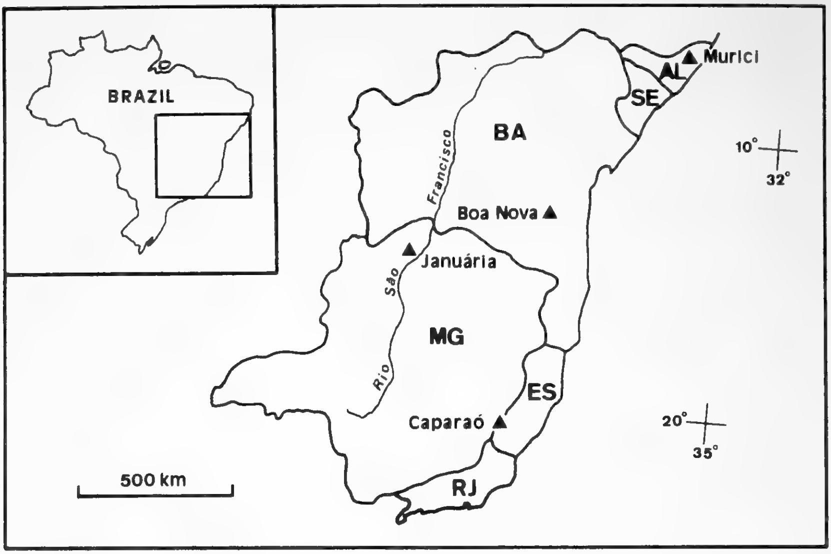

Figure 1. Map of eastern Brazil showing the type-localities of *Phylloscartes beckeri* sp. nov. (Boa Nova, Bahia), *P. ceciliae* (Murici, Alagoas), *P. roquettei* (Januária, Minas Gerais) and northernmost record of *P. v. ventralis* (Caparaó, Minas Gerais/Espírito Santo).

dark yellow with brownish tips, forming narrow dusky facial crescents. Chin whitish. Throat and breast dirty white flecked with Sulphur Yellow (colour 57). Centre of belly and crissum pale Sulfur Yellow (colour 157). Sides of breast and flanks tinged olive. Base of underparts feathers Blackish Neutral Gray (colour 82). Remiges Sepia (colour 119), fringed narrowly on distal webs with Olive-Yellow (colour 52) and broadly on the proximal webs with whitish; distal webs of secondaries, especially innermost, with broad whitish apical spots. Lesser upper wing coverts black with Olive-Green borders; alula, median and greater upper coverts of primaries black fringed with Olive-Green on distal webs; the other median and greater upper wing coverts black fringed with Olive-Green, the median on proximal webs and the greater on distal webs, and with broad pale Sulphur Yellow (colour 57) tips, forming two wing bars; bend of wing and under wing coverts pale Sulphur Yellow (colour 57). Rectrices Vandyke Brown (colour 221), narrowly fringed on outer webs with Yellowish Olive-Green (colour 50), tips whitish. Soft part colours: irides brown; bill brown except basal two-thirds of the mandible, which are pearl-coloured; tongue and gape orange; feet pale bluish-grey (brownish in dried specimen). Wing formula: p7 and p8, of nearly equal length, are the longest primaries, p6 and p9 slightly shorter; p10 6 mm shorter than p9 and nearly equal to p1; p5 slightly shorter than p6, p4 slightly shorter than p5, p3 slightly shorter than p4, p2 slightly shorter than p3 and slightly longer than p1.

TABLE 1

Measurements (mm) and mass (g) of the type specimens of *Phylloscartes beckeri* sp. n. compared to mean values of *P. ventralis* (Willis & Oniki 1992) and *P. ceciliae* (calculated from data in Teixeira 1987a)

Specimen	sex	wing[a]	tail	culmen	tarsus	total length	mass
MZUSP 73706	♂	54/53	52	7[b]/12[c]	18	120	8.5
MZUSP 73708	♂	55/54	51	7/12	19	120	8.5
MZUSP 73709	♂	54/52	51	7/12	19	120	9.0
MZUSP 73707	♀	50/48	46	7/12	18	115	7.5
mean	♂♂	54.3/53	51.3	7/12	18.7	120.0	8.7
s.d.		0.58/1	0.58	0/0	0.58	0	0.29
P. ventralis							
mean	♂♂	—/54.1	52.7	—/13.9[c]	19.4	—	—
s.d.		—/2.3	2.4	—/0.6	0.8	—	—
n		—/29	30	—/30	30	—	—
mean	♀♀	—/49.9	48.8	—/13.5	18.4	—	—
s.d.		—/1.7	2.2	—/0.5	0.7	—	—
n		—/19	18	—/17	19	—	—
P. ceciliae							
mean	♂♂	57.2/—	57.0	—/10.6[d]	17.1	127.5	8.4
s.d.		1.1/—	0.9	—/0.1	0.6	5.0	0
n		2/—	2	—/2	2	2	2
mean	♀♀	50.9/—	50.8	—/9.4	16.4	117.0	7.0
s.d.		0.5/—	0.9	—/0.5	0.4	3.0	0.3
n		2/—	2	—/2	2	2	2

[a] flat/chord; [b] from anterior edge of nostril; [c] from skull; [d] exposed culmen.

Description of female (paratype). Like holotype but yellow more saturated on breast and throat; crown and nape less greyish; mandible with a pre-apical (instead of apical) dusky mark.

Variation among male paratypes. No appreciable variation was found.

Measurements. As in *P. ceciliae* (Teixeira 1987a), *P. kronei* and *P. ventralis* (Willis & Oniki 1992), *P. oustaleti* and *P. paulistus* (Gonzaga unpub. data), males of *P. beckeri* seem to be slightly larger than females, which is indicated by the mass, total length, wing and tail measurements of its type specimens (Table 1). No significant difference (two-tailed *t*-tests) in measurements was found between these males and those of a larger series of *P. ventralis* (*cf.* Willis & Oniki 1992), except that the culmen was slightly but significantly shorter ($P<0.01$) in *P. beckeri* (which also has weaker rictal bristles). The tails of two adult males of *P. ceciliae* (*cf.* Teixeira 1987a) are significantly longer ($P<0.01$) than those of males of either *P. beckeri* or *P. ventralis*.

Specimens examined (all from MZUSP). P. ventralis and *P. kronei*—same as in Willis & Oniki (1992), except types of the latter not examined.

P. oustaleti—**Bahia**: Boa Nova 1♂; **Espírito Santo:** Chaves (Santa Leopoldina) 3♂, 1♀; **Rio de Janeiro**: Teresópolis 2♂, 2♀; **São Paulo**: 1 sex? (♀ by measurements); Salesópolis (Boracéia) 3♂, 1♀; Alto da Serra

1♂; Caraguatatuba 2♂; Tamanduá (rio Ipiranga) 1♂; Estação Engenheiro Ferraz 5♀, 3 sex? (one being ♂ and the others ♀ by measurements); Iporanga 2♂; Iguape 1 sex? (♂ by measurements); Ribeirão Fundo 1♂.

P. paulistus—**Espírito Santo**: Chaves (Santa Leopoldina) 1♂; **São Paulo**: Estação Engenheiro Ferraz 1♂; Victoria (=Botucatu) 1♀; Assis (Corredeira das Flores) 1♀; Poço Grande (rio Juquiá) 1♀.

P. difficilis—**São Paulo:** Serra da Bocaina 1 sex?; Alto da Serra 1♀.

Etymology. We are pleased to name this species after our good friend, the Bahian entomologist Johann Becker of the Museu Nacional do Rio de Janeiro, in recognition of his long-standing interest in several fields of natural history. He has influenced and aided many students and young biologists who have had the opportunity to be in contact with him, as we have had over the years; all have benefitted from his vast knowledge and tireless willingness to help.

English name. We propose Bahia Tyrannulet as the English name of this new taxon because it is the only species of *Phylloscartes* known to be endemic to this area.

Habitat and behaviour

All of the individuals we found of this new taxon were in only three forest fragments, all dissected by mountain streams. One (the type-locality) was a highly disturbed, possibly old secondary, patch of Atlantic forest near the summit of the mountain (900–1100 m), crossed by a trail which led directly down to the main road *c*. 8 km southeast of Boa Nova. The second is a tract of forest reaching lower levels (750–1000 m) in the same range *c*. 13 km east of Boa Nova by the same road, and crossed by an equally good trail (see Forrester 1993) along which *P. beckeri* was found at elevations above 900 m. Another and more extensive patch (*c*. 300 ha?) of similar habitat in much better condition in the vicinity of the latter was found during our expedition in 1993, but owing to difficulties of access only a preliminary survey could be undertaken. This site was revisited by J.F.P. and B. M. Whitney in November 1993.

Due to our concern about the evident plight of these forests and their birds, and given the immediately apparent distinctness of the plumage and voice of *P. beckeri*, we made no further attempts to enlarge our type series. Not many (approximately ten?) other pairs were recorded, either at the type-locality or in the other forests surveyed.

Individuals of *P. beckeri* were observed foraging primarily in the upper one-third or one-quarter of trees both at the forest edge and in the interior of forest, ranging from about 6 to 12 m above ground. Birds foraged in pairs or small, possibly family groups (maximum of four together), and almost always travelled with mixed-species flocks of insectivores which sometimes included some frugivores. Search movements were primarily short hops and flutters during which the wings were sometimes drooped slightly and frequently flicked shallowly (B. M. Whitney), and the tail was cocked above the horizontal, like other species of *Phylloscartes* (e.g. Teixeira 1987a, Willis & Oniki 1991, 1992; pers. obs.). This tail-cocking motion was often accomplished in a series of 3 to 5 shallow, rapid, upward flicks in a period of about one second, sometimes elevating the tail nearly to the vertical (B. M. Whitney). Short flights were often accompanied by a noisy flutter of wings, as in *P. ventralis* and *P. kronei* (Willis & Oniki 1992; pers. obs.), and perhaps some other *Phylloscartes* species. Individuals occasionally remained still on a perch for up to about 20 seconds, apparently scanning visible leaf surfaces both in front and overhead (B. M. Whitney).

Most foraging manoeuvres (nomenclature following Remsen & Robinson 1990) were laterally and slightly upward-directed, semicircular sally-hovers of less than 0.5 m range; the birds also performed short forward reaches, flutter-chases and, least often, sally-strikes and stalls in which the wings were mostly closed (B. M. Whitney). Most foraging was done at or near the peripheral leaves and twigs of the trees, with relatively little time spent in the interior half of tree crowns. Arthropod prey included very small insects. On one occasion an insect about 2 cm long was obtained in a sally-hover to a leaf on the outer edge of a tree, and was held in the bill and briefly beaten against a limb before being swallowed (B. M. Whitney). The stomachs of four specimens (the type series) collected in the morning contained remains of Coleoptera (75% of all identifiable food items and 100% of stomachs) including Curculionidae, also Diptera Brachycera (imago and larva), Lepidoptera, Hemiptera and Dermaptera.

Occasionally among the flock associates of *P. beckeri* was Oustalet's Tyrannulet *P. oustaleti* (which we tape-recorded and collected at the type-locality of *P. beckeri*, documenting a significant range extension; see also Gonzaga *et al.* in press), which parallels this latter species's sympatry with *P. ventralis* in certain localities in the Serra do Mar further south (Willis & Oniki 1981a; pers. obs.).

Vocalisations

Members of a pair often uttered *tik* contact notes (Fig. 3d,e) which were very inconspicuous; we also recorded an equally faint twittery song (Fig. 2a,b) given apparently in response to playback usually some time after it or from time to time spontaneously by paired foraging birds (see also Fig. 3a). Neither this song nor the contact call elicited response from one pair of *P. ventralis* at the Itatiaia massif, Rio de Janeiro, in January 1994; foraging pairs of *P. beckeri* that were presented with playback of *P. ventralis*'s voices (Fig. 2c,d, Fig. 3b,c,f) in August 1993 did not respond either.

However, birds reacted immediately to the playback of their own species' voices, calling back, stopping foraging and approaching the observer in search for the sound source. Birds of both species thus tested descended from higher levels of vegetation to a few metres above ground, where they remained silently while taped voices were played again. No voice of *P. ceciliae* (Fig. 2e, Fig. 3g) was tested against either *P. beckeri* or *P. ventralis*.

As the sonagrams (produced by B. M. Whitney on a Macintosh IIsi computer using Canary 1.1 software; FFT frame length 128 points, filter bandwidth 706 Hz) illustrate, songs and calls of these three

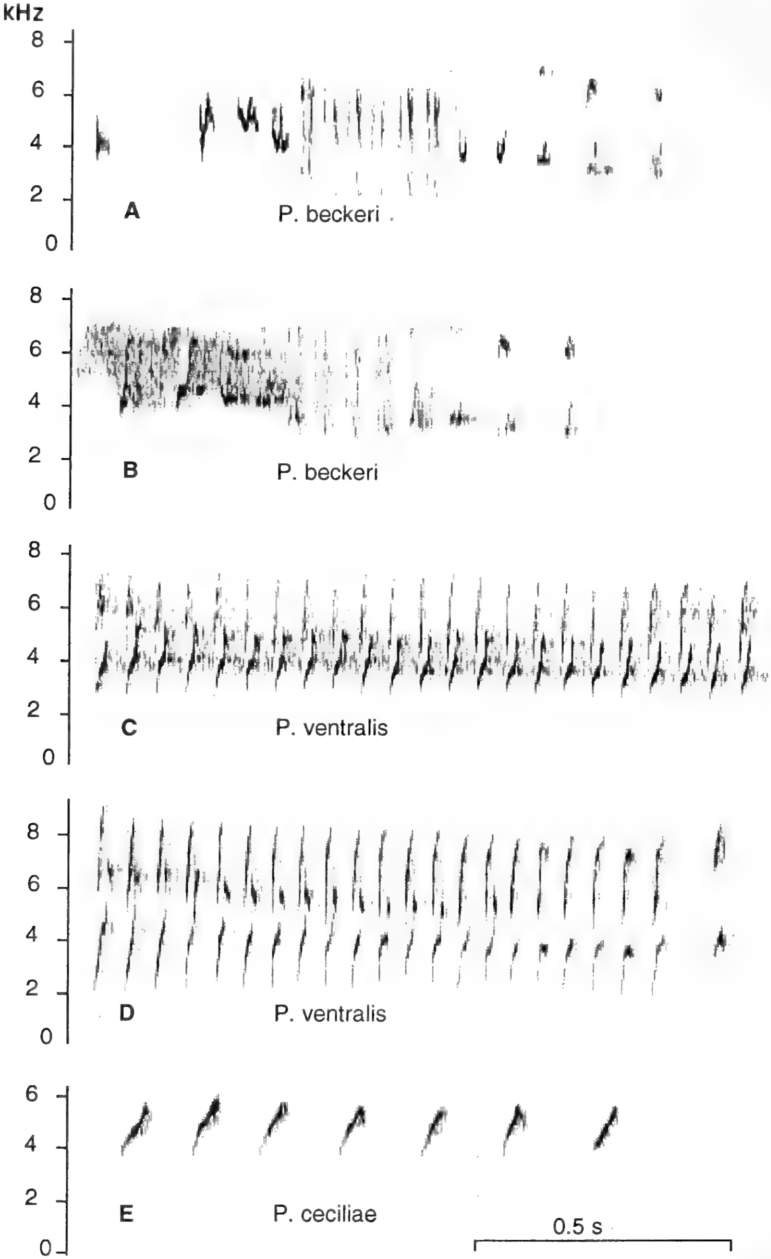

Figure 2. Sound spectrograms of voices of *Phylloscartes* spp.: *P. beckeri* sp. nov.—(A,B) songs of one individual (holotype), J. F. Pacheco, 6/9/92, Boa Nova, BA; *P. ventralis*—(C) song, P. S. Fonseca, 18/1/88, Teresópolis, RJ; (D) song, J. F. P., 5/4/92, Teresópolis, RJ: *P. ceciliae*—(E) probable song, B. M. Whitney, 20/10/90, Murici, AL.

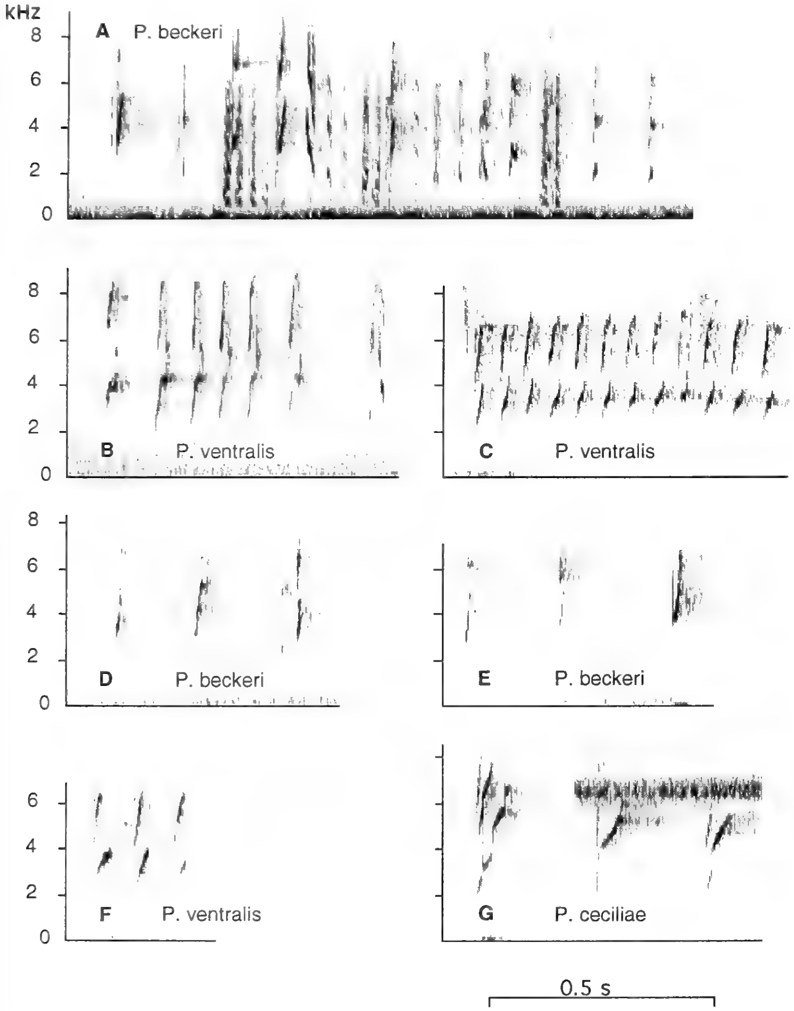

Figure 3. *P. beckeri* sp. nov.—(A) song and wing flutters (tall verticals 0.2–6 kHz) of interacting members of a pair, L. P. Gonzaga, 24/8/93, Boa Nova, BA; (D,E) contact calls, probably one individual (paratype), J. F. P., 6/9/92, Boa Nova, BA; *P. ventralis*—(B) variation of song, same individual as in Fig. 2D, J.F.P., 5/4/92, Teresópolis, RJ; (C) short 'song', P. S. F. 15/2/88, Itatiaia Nat. Park, RJ; (F) contact call, P. S. F., 20/2/88, Teresópolis, RJ; *P. ceciliae*—(G) single-note call and two-note call, B. M. W., 20/10/90, Murici, AL.

species differ markedly from each other in rhythm, harmonic structure and modulation of individual notes. We did not hear from *P. beckeri* anything like the *feesee* call of *P. kronei* (sonagram in Willis & Oniki

1992), and the song of the Minas Gerais Tyrannulet *P. roquettei* (sonagram in Willis & Oniki 1991) is apparently also very different from that of *P. beckeri*.

Copies of recordings are or will be deposited in the Arquivo Sonoro Prof. Elias Coelho (ASEC) of the Universidade Federal do Rio de Janeiro, Arquivo Sonoro Neotropical (ASN) of the Universidade Estadual de Campinas, and Library of Natural Sounds (LSN) of Cornell University.

Conservation

Atlantic forest has virtually disappeared from the mountain tops and lower slopes of the Serra da Ouricana around Boa Nova owing to the expansion of pastureland and cultivation. All the sites we visited were privately owned and under pressure from clearance and fire spreading from neighbouring cleared areas. This situation and the very limited size of these fragments give cause for special concern, since they were almost certainly the only remnants of Atlantic forest in the region, as we could judge from observations made from high look-out points, interviews with local people, and exploration in random search of other forest patches. Searching for a suitable area for creation of a conservation unit of this habitat and its birds at equivalent altitudes along the Serra da Ouricana is, therefore, an urgent need, and probably the only hope for the continued survival of *P. beckeri*.

It is unfortunate that since the Slender Antbird *Rhopornis ardesiaca* was rediscovered near Boa Nova (Naumburg 1934), most subsequent efforts of ornithologists at this locality have apparently been directed exclusively or mainly to locating and studying this bird in the *mata-de-cipó* (e.g. Willis & Oniki 1981b, Teixeira 1987b), and the existence of Atlantic forest a few kilometres to the east has thus remained unnoticed for so long.

Eight threatened species included in Collar *et al.* (1992) have been recorded in the study area: Golden-capped Parakeet *Aratinga auricapilla*, Blue-chested Parakeet *Pyrrhura cruentata*, Golden-tailed Parrotlet *Touit surda*, Striated Soft-tail *Thripophaga macroura*, Black-headed Berryeater *Carpornis melanocephalus*, Buff-throated Purpletuft *Iodopleura pipra*, Cinnamon-vented Piha *Lipaugus lanioides*, and Fork-tailed Pygmy-tyrant *Hemitriccus furcatus*. *P. beckeri* and the still undescribed *Synallaxis*, found too late to have been considered for inclusion in the Red Data Book, are clearly threatened species that should be added to this list. In addition, many near-threatened species (*sensu* Collar *et al.* 1992) also have been recorded there.

The above figures alone indicate the magnitude of conservation concern that the Serra da Ouricana deserves. Its plight can be paralleled in the Atlantic forest region perhaps only by that of highland forests in Alagoas where, however, some conservation measures are at least now incipient (see Collar *et al.* 1992: 602, 630), well before those forests have been subjected to the dire circumstances surrounding the continued existence of the montane forests of southern Bahia. Considered together with the adjoining and also highly endangered *mata-de-cipó* which harbours a distinctly different avifauna that includes several endemic and threatened birds (Collar *et al.* 1992: 680), forest habitats in the Boa Nova area are probably the most neglected habitats in Brazil with regard to bird conservation, and their endemic birds are among the most endangered on earth.

Acknowledgements

We are deeply indebted to Bret Whitney for his continuous help, critical reading of the manuscript and invaluable contributions to it. Gloria D. A. Castiglioni and Claudia Bauer assisted in preparation of skins and examining museum specimens. Paulo Sergio Fonseca also joined field parties. We are grateful also to Douglas F. Stotz and Helio F. A. Camargo for help while in charge of the ornithological collection of MZUSP, and to Dave Willis and Paul Gadd for calling our attention to the Boa Nova area. Support to ASEC came from the Conselho Nacional de Desenvolvimento Científico e Tecnológico and the Fundação Universitária José Bonifácio.

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The northern races of *Icterus pustulatus* (Icteridae), Scarlet-headed or Streaked-backed Oriole

by Allan R. Phillips

Received 20 July 1993

The *pustulatus* group of American orioles was long recognized as comprising three species (Ridgway 1902): the Central American *I. sclateri*, with broad black centres to the back feathers; the more narrowly streaked *I. pustulatus* (supposedly) of the Mexican mainland; and the big-billed, orange-yellow backed *I. graysonii* of the Tres Marías Islands off western Mexico. All are chiefly from the Pacific slope.

In 1927 van Rossem expressed his "strong impression" that *sclateri* and *pustulatus* were conspecific, and they are now so considered generally. In adult *sclateri* he found individual variation the most important factor in the amount of black on the back; and the characters of *I. s. alticola* Miller and Griscom, 1925 he found unstable. But he attributed colour variation in El Salvador partly to migration; this is unlikely and is denied by Thurber *et al*. (1987).

Griscom (1930) nevertheless recognized as many as six named Central American forms, examining more than 80 skins. But though the statistics may sound impressive, surely few were unworn specimens of the same age/sex class; and his different series were not seasonally comparable, *fide* R. W. Dickerman. Hellmayr (1937) considered most of Griscom's and van Rossem's races to be based on individual variation and intergradation. Blake's (1968) supposedly authoritative synonymies simply omitted all races not recognized by Hellmayr.

I lack material to revise the Central American race(s). But on my first trip south of Sonora, in 1952, I was impressed by the differences between supposed *microstictus* of coastal Nayarit and Sonoran *microstictus*. So I gathered Mexican material of taxonomic value: unworn specimens with full data, carefully dissected.

Species limits

No biological or vocal differences are yet known in this group. The only hindrance to rating them as subspecies is their supposed geographic overlap in southern Mexico. Here Ridgway (1902) reported *sclateri* north to central Oaxaca (Ciudad Oaxaca) and even Cuicatlán, not far south of southeastern Puebla; while *pustulatus* ranged south and east to coastal Chiapas (Tonalá). But I find no such overlap in comparable material; and Binford (1989) considers all southwestern Oaxaca birds to be intergrades.

No English name appropriate for the entire species is apparent. Eisenmann (1955) proposed to change them all, with *I. sclateri* becoming "Streak-backed" Oriole. This was adopted for the entire species by A.O.U. (1983). But besides the fact that "Streak-backed" might seem to imply a single streak (as through the eye), *graysonii* is plain-backed. "Scarlet-headed Oriole", even when not exact, is at least mildly suggestive of some males of all races; but none could possibly imagine any *graysonii* as "Streak-backed". Thus "Scarlet-headed Oriole", already in use by A.O.U. (1957), is at least more appropriate than "Streak-backed Oriole" for the species; it does not directly contradict the pattern of any race. Why this strange passion to change established names and thus outdate and confuse the literature and archives (in the name of avoiding confusion! A.O.U. 1983: xxii)? See especially Griscom (1947), also Phillips (1986: xlix-lii).

Mexican subspecies

Variation in mainland Mexico is largely clinal. The least conspicuously streaked populations are in the northwest, the broadest black streaks in the southeast. This pattern is modified, however, by small size and bright colours along the central Pacific coast, as explained below.

Samples from various outlying and insular populations are too small for definite classification. Besides comparing specimens within correct age/sex classes, in useful plumage, we must beware the occasional unusual moult pattern. (Normally, the first basic plumage lasts a full year.) Present material permits formal recognition of only six races in México:

Icterus pustulatus microstictus Griscom 1934, *Bull. Mus. Comp. Zool.* 75: 408 (Guaymas, Sonora).

Diagnosis. The dullest race. Median streaks of interscapulars black only in ♂ adult, where narrower than in central and southern Mexican ♂♂. Dusky streaks least blackish (palest) in Sonoran ♀♀, which look uniformly greyish above in unworn plumage, due to broad tips of feathers from crown to upper tail-coverts; their tails are also less blackish than in other races. Immature ♂ also dullest, greyest. Tertials usually less black-and-white, showing somewhat less internal contrast. Middle wing-coverts white.

In Sonora, bill rather long and heavy; ♂ adult wing (chord), here and nearby, (94.2) 96.5–101.7 (105.2); tail, unless frayed, (87.9 [+?]) 89.2–96.7 (99). (Figures in parentheses represent single, apparently exceptional, specimens measured; plus signs indicate wear.)

Distribution. Resident (largely) from north-central Sonora south: coastally to southern Sinaloa, to at least 24°N (Elota) and probably the Mazatlán area; farther inland probably to Jalisco (and northern Michoacán?). Winters occasionally north to Tucson, Arizona (casually farther); possibly also southward (see below).

Notes. North of about 28°N in Sonora, many seem to leave in October and return in March (G. Monson). These may be more post-breeding than long-distance movements; the (recent) Tucson dates (31 July, specimen; 27 September to 22 March; Monson & Phillips 1981) correspond to its scarcity in northern Sonora. Note also the situation near Tepic, Nayarit (discussed below). Individual variation in colour is impressive, and I find no convincing evidence of long-distance migrations. I especially doubt the occurrence of

TABLE 1
Measurements of adult ♂ Mexican *Icterus pustulatus*

Area	*n*	Wing chord	*n*	Tail
Tres Marías Is. (mostly *ex* Ridgway)	6	102.9–106	6	90.2–94.3[+]
Sonora (and Tucson, Arizona)	6	94.2, 96.5–101.7, 105.2	5	87.9[+(?)], 89.2–96.7, 99
Coastal Nayarit (San Blas south to Las Varas)	4	90.5, 93.2–94.5	4	81.2[+(?)]–86.5
Nayarit (insular)	2	91, 94.7	2	80.3, 83.7[+??]
Southwestern Jalisco	1	92.5	1	79.8
Central to central-eastern Colima	10	(ca. 94–99.7)	10	80, 82–87.7
Volcán de Colima (north slope, migrant?)	1	(ca. 99–100)	1	91
East-central Guerrero (southeast of Chilpancingo)	21	93.5, 94.9–101.5	21	80, 83.4–89, 91.1
Coastal Guerrero (Acapulco)	11	90.5–95	11	77.7[+?], 80.3[+?]–82.8[+?]
Western Oaxaca (Putla)	2	97.8, 98.7	2	83.8[+(?)], 85.5[+(?)]
Central coastal Oaxaca (Puerto Angel)	1	96.4	1	81.3[+]
Coastal Oaxaca (west of Tehuantepec)	6	105.3–108.7	6	88.5–94.5
Southeasternmost Oaxaca (foothills of Sierra Madre de Chiapas)	4	maximum 103.7	4	maximum 88.7
Southeasternmost Oaxaca (south shore of Mar Muerto)	2	106.5, 107.5	2	90.8, 96
Central Chiapas (Tuxtla Gutiérrez) and southeast	7	103.5, 105–109.5	7	89, 90.3–94.3

Note. Plus signs indicate wear at the tips of the longest flight-feathers. Figures set off by commas are thought to be probably exceptional.

microstictus in Guerrero after March ("not breeding, November-May, O-d [=specimens in Museum of Vertebrate Zoology, University of California]"), claimed by Miller *et al.* (1957).

Field guide descriptions of all *I. pustulatus* as having "back and scapulars boldly striped with black", etc. (Blake 1953, Peterson & Chalif 1973) obviously do not describe most *microstictus*—nor any *graysonii*! The northern ♀ or immature is best portrayed in Edwards (1972).

Icterus pustulatus graysonii Cassin 1867, *Proc. Acad. Nat. Sci. Philadelphia* 19:48 (Tres Marías Islands, Mexico).

Diagnosis. Back orangeish yellow (♂) or light yellowish olive (♀ and immature, Ridgway), unstreaked or with a few fine black streaks.

Middle wing-coverts (♂) pale yellow to yellowish-white. Bill longest: exposed culmen ♂ 24.9–26.7, ♀ 22.9–24.9 (Ridgway 1902).

Distribution. Resident on Tres Marías Islands, off Nayarit.

Note. An occasional ♂ from the mainland coast (A. R. P. original no. 10,737, Singaita, near San Blas, 3 May 1973) has plain yellowish interscapulars, with hardly perceptible black streaking. But the middle wing-coverts are richer, and bill shorter, than *graysonii*.

Icterus pustulatus yaegeri subsp. nov.

Diagnosis. Smaller and brighter than *microstictus*. ♂ immature more yellowish olive (greener, less greyish or drab) on crown and back. ♀ also brighter above, and juvenile relatively bright above and below. Middle wing-coverts of ♂ adult usually (orangeish) yellow, and wing (chord) 90.5–94.7 ($n=5$), tail 80.3(+?)–86.5 mm; bill smaller than *microstictus*. Dark streaks of mid-back, in ♀ adult, not over 2.0 mm wide, usually decidedly less.

Distribution. Resident (presumably) in coastal lowlands from southernmost Sinaloa south to southern Nayarit. Inland it apparently approaches Tepic and the valley south of Compostela; but most specimens from the eastern, inland foot of the mountain just south of Tepic are dull like *microstictus* (see below), and the apparent approach may be seasonal dispersal.

Type. ♂ immature, A. R. P. original no. 4443, 8 km north of crossing of Río San Pedro at Peñitas, northwestern Nayarit, 16 December 1956. Length (extreme, in flesh) 211 mm; extent (wingspan) 302; wing (chord) 92; tail 79 [+; some wear]; streaks on mid-back 1.8 mm wide.

Etymology. To my compadre Lewis D. Yaeger, who introduced me to Nayarit and vicinity, collected much of the Nayarit material, and has aided me greatly in my work.

Notes. Adequate series (few of which exist) will probably adjust my distributions. In the absence of mountain, water, or forest barriers, we must expect intergradation and intermediate populations. Racial limits will not be sharp lines.

Many specimens in the considerable March series from the eastern foot of the mountain south of Tepic are practically indistinguishable from my few Sonora birds, but have somewhat smaller bills. They may represent short-distance dispersal, attracted to the ranch where Yaeger raised flowers—which evidently drew coast orioles also.

Icterus pustulatus dickermani subsp. nov.

Diagnosis. Like *yaegeri*, but still brighter in all plumages; the brightest known race with limited black above. Black streaks on mid-back *c*. 1.7–2.3 mm wide in adult ♀, whose crown is deep and bright, usually reddish-orange (sometimes orangeish-olive), and back deep (orangeish-tinged) olive—less olive- or greyish-washed than *yaegeri*. ♂ immature similarly less tinged, paler (clearer) yellow above. ♂ adult with streaks *c*. 1.4–2.8 mm wide, wing (chord) 90.5–95 (98.8), and tail (77.7[+?]) 80(+?)–83.5 (84.1) mm.

Distribution. Resident (presumably) in Pacific lowlands from southwesternmost Jalisco (intermediate?) and coastal Colima east to at least southern Guerrero, where north to the Tierra Colorada area.

Type. ♀ (adult?), Santos Farfán B. no. 27, Joluchuca, 17°21½'N 101°12½'W, southeast of Petatlán, southwestern Guerrero, 18 December 1968. Wing (chord) 91.5, tail 81.4, culmen from base 20.5; back streaks 1.5 mm wide. In my collection.

Etymology. To Dr. Robert W. Dickerman, expert ornithologist and steadfast friend, who for many years has aided greatly in my work, including our explorations in Guerrero.

Note. May extend, narrowly along the coast, into Oaxaca. A ♂ adult from as far east as Puerto Angel (LSU) has wing 96.4, tail 81.3 [+], but is broadly streaked like *pustulatus*. Farther west, specimens from Putla (Muséum National d'Histoire Naturelle, Paris) also appear intermediate.

Icterus pustulatus interior subsp. nov.

Diagnosis. Intermediate between *microstictus* and true *pustulatus* *(infra)*. Moderately bright; ♀ and immature duller above than *yaegeri* or *dickermani*, but brighter than *microstictus*. ♂ adult with scapulars greyish-edged externally and back streaks usually *c.* 1.7–2.5 mm wide, as in preceding races, but wing usually 95–101.5, tail 83.4–91 mm.

Distribution. Resident (presumably) in southern and central Mexico away from the coast; from central Colima (intermediates?) and southern Michoacán (Río Balsas valley north of coastal mountains) east probably to western Oaxaca, and north at least to Morelos.

Type. ♀ adult, A. R. P. original no. 10,650, Cañón de Lobos 20 km east of Cuernavaca, Morelos, 4 November 1972; prepared by Santos Farfán B. Wing 92.5, tail 86.7, back streaks *c.* 1.5 mm wide. Weight 34.8 g, little fat.

Etymology. The name refers to the fact that it is found only away from the coastal low-lands.

Notes. This is most of *I. p. pustulatus* auct. nec Wagler (see below). From its range I exclude Veracruz and the state of México, where occurrence is unconfirmed; also provisionally most northern populations: southernmost Zacatecas, Puebla and vicinity, and especially Cuicatlán, Oaxaca. Available material does not warrant naming these now. (Coastal Jalisco birds are also best left unnamed, not forced into either *yaegeri* or *dickermani*.)

Occurrence in the state of México rests on an "Atlisco, México" report; this presumably refers to Atlixco, Puebla, east of northern Morelos.

Icterus pustulatus pustulatus (Wagler) 1829, Isis von Oken 22, col. 727 (Mexico).

(?) *Icterus formosus* Lawrence 1872, *Annals Lyc. Nat. Hist. New York* X: 184 (Juchitán, southeastern Oaxaca).

Diagnosis. The most extensively black Mexican race. Scapulars of adults practically wholly black externally; black streaks in middle of back usually 3–4 mm wide in ♀ adult, *c.* 3–5 mm in ♂, whose middle wing-coverts are usually partly yellow or orangeish. Generally bright and large; bill large as in *microstictus* and wing, in most areas, long.

West of Tehuantepec, Oaxaca, where size seems about average, adults have wing (chord) 105.3–108.7 (7♂), 98–101.5 (3♀); tail 88.5–94.5 (7♂), (81.2) 86.5, 88.8 [+(?)] (3♀).

Distribution. Resident (presumably) from southeastern Oaxaca (west at least to 95°35′W = Tequisistlán area) east through Chiapas to (based on 1 dull ♀ imm.) adjacent Guatemala, if not far beyond. Birds like *pustulatus*, west to near the Valley of Oaxaca (southeast of Matatlán, LSU), apparently indicate populations intermediate toward *interior*.

Notes. Stresemann (1954) showed that the type or lectotype of *pustulatus* was taken by Deppe at "San Matteo" (= San Mateo del Mar), Oaxaca. Blake (1968) hesitated to transfer the name to what he called *formosus* because (1) Stresemann had not stated how or by whom the lectotype was selected, and (2) "because of the profusion of villages bearing the name San Mateo and the possibility that the provenance of the lectotype was not coastal". But if Wagler saw specimen(s) from other place(s), none is now known to exist. In case Stresemann's designation is not considered definite, I formally designate Berlin Museum 7556 as the lectotype of *Psarocolius pustulatus* Wagler, 1829.

The type is labelled "San Matteo, Nov. 1825, Deppe" and "Mas"; but it is evidently an adult female still in moult. The outer primaries are still sheathed (p9 is missing in one wing); p5 is longest but p6 subequal. The right wing (chord) measures 100 mm, the left more but apparently artificially; bones seem broken. Tail 91.5; black streaks on medial feathers 2.0 (on one 2.4), maximum on lateral feathers (at rear) 2.7 mm. The tail is black with extensive whitish corners; wing-markings white. The body, in 1966, was quite dull—much duller than cheeks; the upperparts were much overlaid with brownish. I saw no reason to question its coastal origin.

Not only is the type more narrowly streaked than is usual in southeastern Oaxaca, but the pale feather-edgings are naturally at their widest when freshly moulted. Thus it would appear rather narrowly streaked if examined without knowledge of annual cycles. Such examination may account for the supposed overlap of races in Oaxaca and Chiapas, where I find none.

As treated here, *pustulatus* is variable geographically. Birds from two points near the coast, in southeastern Oaxaca, are quite yellow, decidedly less orangeish than those from points not far north. The latter, locally at least, are also decidedly smaller: adult ♂♂ (MEXU, RTM) wing under 94, tail under 89 mm. Birds of surrounding populations are larger: central and central-eastern Chiapas; near to west of Tehuantepec, Oaxaca (but 1♂ adult to north measures 103.8, 84.8).

But a valid subspecies should be recognizable without referring to the labels in sedentary birds, in at least the great majority of taxonomically useful specimens; and it should occupy geographically contiguous areas. Probably very few if any Central American populations of *I. pustulatus* would satisfy these criteria if adequate useful material were available. In southeastern Mexico what at first seemed good subspecies now seem to show mosaic, rather than orderly or clinal, geographic distributions. But the large central Guatemalan race *alticola* Miller and Griscom may be recognizable (see however van Rossem 1927).

But though disorderly, geographic variation within *I. p. pustulatus* exists, as above. Monroe gives no details in claiming (1968) that "variation in color in populations south of Oaxaca seems to be entirely individual in nature" and that size variation in Honduras and Central America is great but not geographic nor altitudinal. His measurements ("wing: ♂, 103.1–117.9, mean 110.7; ♀, 101.9–115.5, mean 105.7") evidently reflect failure to consider the factors involved: age classes, wear, moult, and correct determination of sex and species. I find no such wide variation (*c.* 13%) in properly segregated specimens.

A contributing factor was evidently misidentification. In 1976 I found AMNH 748590 (♀, Comayagüela, Honduras) identified as *I. pustulatus flammulatus*; it was really *I. pectoralis*, as originally identified, with the throat still in juvenal plumage. (The feet, for one thing, were too heavy for *I. pustulatus.*) Monroe includes AMNH in his lists of specimens examined, but only 1 of his 78 *pectoralis* was imm. (a ♂) and none juvenile; whereas 4 imm. ♀♀ *pustulatus* were listed.

Acknowledgements

Specimens and/or aid in the field were provided by A. Contreras B., R. W. Dickerman, the late S. Farfán B., R. Phillips F., A. Ramírez V., S. Romero H., and L. D. Yaeger.

Specimens were lent by the following persons and museums (acronyms as in Phillips 1986: vi-x and usually the *Index Internationalis Herbariorum*): California Academy of Sciences, through J. D. Webster; C. Sánchez-Mejorada; Cornell University, through R. W. Dickerman; Universidad Nacional Autónoma de México (MEXU); Universidad Autónoma de Nuevo León; Bell Museum of Natural History, University of Minnesota; Moore Laboratory of Zoology, Occidental College (RTM); Universidad Michoacana de San Nicolás de Hidalgo; and Western Foundation of Vertebrate Zoology.

Additional specimens were examined in the collections of the American Museum of Natural History (AMNH); Berlin Museum; Dickey Collection, University of California, Los Angeles; Louisiana State University Museum of Natural Sciences (LSU); Muséum National d'Histoire Naturelle, Paris; and (at the time) in the collection of W. J. Schaldach, Jr.

I am indebted to all these persons and the authorities of these museums for their help and cooperation.

For copies of references not now available here, I thank M. R. Browning, R. S. Crossin, R. R. Johnson, M. LeCroy, and J. T. Marshall.

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The nest of the Grey-headed Flycatcher *Mionectes rufiventris*

by Glayson Ariel Bencke

Received 11 May 1994

Although nests of most species presently assigned to the Neotropical genus *Mionectes* are already known, that of the Grey-headed Flycatcher *Mionectes rufiventris* of southeastern South America seems to be undescribed. The only reports on its nesting are from Argentina. Peña (1979) gives the measurements of two eggs of *M. rufiventris* apparently from Misiones without mentioning the nest. Castelino & Saibene (1989) report on a Grey-headed occupying a nest of the Sepia-capped Flycatcher *Leptopogon amaurocephalus* from the previous year and a pair carrying nest material to a round, hanging structure of moss with side entrance also in Misiones. These nests held clutches of three white eggs in September and early October.

In February 1990, during field work at Monte Alverne (29°33′S, 52°20′W), Santa Cruz do Sul, Rio Grande do Sul State, southern Brazil, I discovered two nests of the Grey-headed Flycatcher. The first was found on 16 February (collected on 29 May) and contained three white eggs. It was an elongate, moss-covered pyriform structure 85 cm high and 18 cm wide suspended from a Commelinaceae vine about 0.7 m above a small stream inside primary forest. On 18, 22 and 27 February, incubation continued. I captured the presumed female on the 18th. She was moulting on the head and showed a noticeable olive-green colour on the crown. Measurements taken were (in mm): bill (from base to tip) 11.9; wing chord 67; eggs 19.6 × 15.5 and 19.5 × 15.7.

The second nest, hanging over another small stream in secondary forest about 1.3 km east of the first site, was empty on 17 February. It was similar to the first, including measurements, and was hanging from a pendent vine 1.8 m above the water. As this nest still appeared to be unoccupied on the 26th, I collected it for studies.

The nests consisted of an elongated, cone-shaped 'roof' and a round nest chamber, completely enclosed and supported by the former. The roof was almost entirely of living moss, with a few slender twigs and dead leaves interspersed. Blackish fibres (probably fungal rhizomorphs) attached the moss to the supporting vine. In nest 1 the fine roots of the vine continued to grow inside the moss, increasing the attachment of the moss to the support. The latter ran inside the roof for almost all its length, emerging from it only behind the nest chamber (Fig. 1).

Inspection of the nest chamber's structure showed it to be unexpectedly complex. I could identify as many as 7 layers of material in the

Figure 1. Nest of Grey-headed Flycatcher *Mionectes rufiventris* from Monte Alverne, southern Brazil. Outer cover is mostly of fresh moss.

chamber of nest 1, and at least 4 in nest 2. The external layer was mostly of fresh moss (dry moss in nest 2). Just beneath it there was a discontinuous net of entangled small rootlets and rhizomorphs followed by another thin layer of fresh moss (these 2 layers not clearly distinct in nest 2). The next layers (i.e., inner ones) were progressively less extensive and did not cover the chamber's wall for its whole extent. The first of them was composed of a dry, soft straw of uncertain origin. Under the magnifying glass it appeared to be mostly the main veins of decomposed leaves of some kind of grass. This material was present in two distinct layers in nest 1, appearing mingled with rootlets and rhizomorphs in the innermost one. The lining consisted of a thin saucer of blackish fibres covered by a slender layer of soft straw (this absent from nest 2). The upper rim of the chamber projected somewhat above the entrance.

Even when observed under the magnifying glass, nest materials were normally unidentifiable without comparison with other sources. The blackish fibres may have a double origin, part almost certainly being fungal rhizomorphs, the remainder probably central strands of leaves of *Tillandsia* bromeliads.

Slight dissimilarities in nest structure may reflect differences between the builders, in nest material availability, or else distinct local weather conditions. At both sites, moss was abundant over trunks and stones nearby. The blackish fibres were also present (though uncommon) on decomposing wood. The dead, rather than fresh, moss found in the chamber of nest 2 might be due to drier conditions before or after placement in the nest. Especially in nest 2, the limits between some layers may have been obscured by moss growth after nest building.

During observations at nest 1, I did not record any lek activities nearby though a few individuals were feeding on small fruits in mixed flocks at the forest edge. However, in late December 1991, there were lek displays within 50 m of nest 1 of the previous year. On that occasion, a few males (2 or 3 seen) sang persistently until late in the morning from perches 2–4 m and *c*. 30 m apart (hence, within earshot of one another). They uttered series of weak, nasal notes, *daao-daao-daao-dao-daodaodaodaodao-dao*(*-dao*), and once one was seen performing short lateral jumps accompanied by wing flicks while he sang. This bird also hovered once.

Mionectes species are rather homogeneous with regard to nesting behaviour. So far as known, they are lekking birds that display at dispersed groups in the forest understory. Their nests are similar in being pendent ball- or pear-shaped structures suspended from hanging vines, aerial roots or slender twigs, usually over a stream in forest interior, and clutch-size is near 3 (Pinto 1953, Skutch 1960, Wetmore 1972, Willis *et al*. 1978, Snow & Snow 1979, Oniki & Willis 1983, Sick 1985, Skutch 1985). Moss is cited as the main material used in nest construction except for *macconnelli* (Pinto 1953, Willis *et al*. 1978, Oniki & Willis 1983), which is regarded as the closest relative of *rufiventris* (Willis *et al*. 1978, Willis 1992). However, the site of all but one nest described for *macconnelli* is a somewhat dry Amazonian forest

(Reserva Ducke, Manaus) where moss is scarce (E. O. Willis pers. comm.), and hence the general absence of moss in these nests probably resulted from local environmental conditions affecting nest material availability rather than divergent nesting behaviour of this species. Even nests of other *Mionectes* species are likely to lack moss coverage under particular conditions (Skutch 1960).

At Monte Alverne, breeding activities of *M. rufiventris* seem to occur late in the season as compared with the records cited above from Misiones (just 2–3° to the north) and with other birds in the Monte Alverne study area (most nests with eggs or young were concentrated from December through February; G. Bencke, in prep.). This is indicated by the facts that in nest 1 eggs were still unhatched as late as 27 February and lek activities at this site were in progress even in late December of the following year. Perhaps breeding is adjusted so as to match the ripening time of some fruits in these deciduous broad-leaved forests, or the species may make more than one nesting attempt per year.

Acknowledgements

I thank E. O. Willis and Y. Oniki for reviewing the English text. J. Larocca assisted in the identification of nest materials.

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The taxonomic status of populations of Archbold's Bowerbird *Archboldia papuensis* in New Guinea

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Received 11 July 1994

This contribution reports only two brief new field observations of Archbold's Bowerbird *Archboldia papuensis*, but they are of considerable systematic significance in the light of past literature. This literature must therefore be reviewed and the new observations placed in context.

Introductory review

Archbold's Bowerbird was the last of the 19 bowerbird species to be discovered (Rand 1940). It is patchily distributed on the central ranges of the vast island of New Guinea in coniferous and mixed beech forests at 1800–2900 m asl (Beehler *et al.* 1986, Coates 1990; see Fig. 1). It is considered geographically restricted, rare and elusive (Collar 1986). The species remained little-known except for the appearance of bowers accumulated by males and a single report of a male display until recent studies of its nesting biology, courtship displays and mating at the bower (Frith & Frith 1988, 1991, 1994, Frith *et al.* in press). Adult males of the eastern population, in Papua New Guinea, wear an elongate bright yellow crest (unknown in western birds) and form a unique 'mat' bower of accumulated fern fronds laid onto the forest floor and decorated with snail shells, beetle elytra, fruits, fungus, tree resin, feathers and other objects (Gilliard 1969, Frith & Frith 1990, 1991). Branches invariably above this decorated 'mat' are draped with numerous stems of epiphytic orchids (Gilliard 1969, Frith *et al.* in press). Bowers of subadult males may, however, consist of little more than a small and undecorated 'mat' of fern fronds and no, or only a few, orchid stems on branches above (Frith *et al.* in press). No bower of this kind has been found in the western population.

The monotypic genus *Archboldia* was erected by Austin L. Rand (1940) for a population of large blackish and apparently crestless bowerbirds he discovered with R. Archbold and W. Richardson in alpine forest at 2200 m asl near Lake Habbema in the Snow Mountains of then Dutch New Guinea, now Irian Jaya, Indonesia, during 11 October to 4 December 1938. He based his description on 3 male and 4 female birds collected, and stated that the species was then only known from between Mt. Wilhelmina and the Idenburg River (Fig. 1, 1), between 2100 and 2800 m asl. An eighth unsexed specimen was subsequently obtained by the Archbold Expeditions in this area and details of it, together with those of a male collected on 14 October 1938 at "Bobare near Wisselmeren, W. Nw. Guinea" at *c.* 1800 m asl (Fig. 1, 2), found in the Zoologisch Museum, Buitenzorg at Leiden, Netherlands, appear in Rand (1942).

Figure 1. Outline map of mainland New Guinea showing some localities mentioned in literature on Archbold's Bowerbird *Archboldia papuensis*: 1=Bele River (type locality); 2=Wissel Lakes, or Wisselmeren, area; 3=Mt. Hagen; 4=Mt. Giluwe; 5=Telefolmin, from which Gilliard searched in vain for *Archboldia* on the Victor Emanuel and Hindenberg Mountains; 6=Ilaga Valley; 7=Tari Gap.

In 1950 E. Thomas Gilliard obtained 11 *Archboldia* specimens (7 adult males, 1 subadult male, 2 females and 1 unsexed) on Mount Hagen in central eastern New Guinea (Fig. 1, 3), which differed drastically from Rand's western birds in that males were entirely jet black with an elongate brilliant yellow crest streaked with black. This population of *Archboldia* was described from four specimens (3 males, 1 female) as a subspecies of the western population found by Rand and was named *Archboldia papuensis sanfordi* by Mayr & Gilliard (1950), who pointed out that both sexes of their eastern birds were generally larger and had a significantly longer tail than those of the west. Mayr & Gilliard considered it possible that the three males collected by Rand were in fact subadults, which would account for their lack of a crest, and this is why they described the Mt. Hagen birds as a subspecies rather than a distinct species. In 1951 Fred Shaw-Mayer discovered more *A. p. sanfordi* bowerbirds on Mt. Giluwe (Fig. 1, 4), *c.* 45 km to the south of Mt. Hagen (Sims 1956).

In 1954 Gilliard surveyed the Hindenburg and Victor Emanuel Mountains (Fig. 1, 5), and his negative results and information obtained from local people convinced him that no *Archboldia* bowerbirds existed there (Gillard & LeCroy 1961). None have been subsequently found there. Thus, the eastern and western populations of *Archboldia* appear to be geographically widely isolated. In view of this, differences in male crests, the apparent size differences, and observations on speciation in closely related gardener bowerbirds of the genus *Amblyornis*, Gilliard decided to elevate the eastern populations of Mt. Hagen and Mt. Giluwe to a full species *A. sanfordi* (Gilliard 1959, 1969). It should be stressed here, however, that at this point the relative measurements of males were strongly biased by the lack of larger, adult males in the western samples (see below).

Gilliard discovered the bower of *Archboldia* on Mt. Hagen in 1950 and described it as a 'mat' of ferns placed on the ground and decorated with snail shells, beetle elytra and fruits. He published photographs of the bower (in Mayr & Gilliard 1954, Gilliard 1959). Subsequent studies have shown that the bower mat decorations may also include tree resin, feathers and beer bottle glass, and that numerous overhead branches are draped with myriad stems of epiphytic orchids (Gilliard 1959, 1969, Frith & Frith 1991, Frith *et al.* in press).

During a study of birds of the Ilaga Valley area of western New Guinea (Fig. 1, 6) S. Dillon Ripley (1964) collected two male *Archboldia* at 2865 and 3658 m, in all-black plumage except that they both had "traces of the deep golden yellow feathers coming in in two areas, the forehead, where the tuft of feathers occur as shown in Sutton's frontispiece plate in Mayr & Gilliard (1954), and the posterior crest which consists of narrow, depressed feathers". Ripley pointed out that this clearly indicated that, contrary to all previous *Archboldia* specimens from western New Guinea, *A. p. papuensis* males do indeed acquire yellow crest feathers but that a fully crested male remained to be obtained or reported. The latter remained true until now (see below).

Ripley went on to record that his field assistant Jacob, whom he had asked to particularly look out for bowers, reported that one of the male *Archboldia* he obtained attended a bower consisting of "two walls of intertwined twigs about two feet six inches apart and eighteen inches high. At each end there was a small collection of pieces of charcoal and blackish fruit. The center space was bare earth. There were no shell or other ornaments. There were no ferns nor vines as described by Gilliard (1959). The whole space was approximately three feet square. This bower fits much more the description of the avenue-builders and suggests that the species may be closer to *Chlamydera* than to the *Amblyornis* assemblage."

The taxonomic status of the eastern New Guinea population of *Archboldia* has been unstable because whilst Mayr & Gilliard (1950) originally described it as a subspecies (*A. p. sanfordi*) of the western population Gilliard subsequently (1951, 1958, 1959) dealt with it as a full species and then reverted to treating it as a subspecies (Rand & Gilliard 1967, Gilliard 1969). In the latter work Gilliard did note, however, that if it were confirmed that the Ilaga Valley population has a stick-walled bower, "I will have no hesitation whatever in elevating my Mt Hagen birds to specific rank". This inconclusive state of affairs is reflected by contrary treatments of *Archboldia* taxa in subsequent literature.

Peckover (1972) admitted a single *Archboldia* species with two subspecies, but Peckover & Filewood (1976) then treated eastern *Archboldia* as a full species, the Tomba Bowerbird *A. sanfordi*, and the western as Archbold's Bowerbird *A. papuensis*; citing a lesser crest and different bower type for the latter taxon. Collar (1986) also used Tomba Bowerbird and *A. sanfordi* to indicate specific rank for the eastern population. Cooper & Forshaw (1977), Beehler & Finch (1985), Diamond (1986) and Beehler *et al.* (1986) considered there to be a single *Archboldia* species with two subspecies, a treatment consistently used by CBF (Frith & Frith 1988, 1990, 1991, 1993a,b, 1994, Frith *et al.* in press). Coates (1990) also recognised a single species and expressed the view that "overlap in measurements and wing-tail ratios of adult females from Mt. Hagen and the Snow mountains suggest (*contra* Gilliard 1969) that this race [*A. p. sanfordi*] may not be separable from *papuensis* of western New Guinea". Sibley & Monroe (1990), however, again recognised two species, *A. papuensis* and *A. sanfordi*, stating "differences and distribution suggest allospecies status". Thus, the debate over the systematic status of *Archboldia* populations is very much a contemporary one.

From the above it is clear that the lack of a record of a fully crested male from western New Guinea and the suggestion that birds there may have a distinctly different bower to that of eastern birds are the main cause of controversy. Measurements of specimens are at this time not appropriate for comparative purposes given the lack of fully (crested) plumaged adult males from the west (see below) and the overlap of those of females from the east and west (Coates 1990).

In 1982 Robert Campbell first reported *Archboldia* in the Tari Gap of Papua New Guinea (Fig. 1, 7) where many bowers and nests have subsequently been found and studied (Frith & Frith 1988, 1990, 1991, 1993a,b, 1994).

New information and its significance

On 14 February 1991 DG found an *Archboldia* bower attended by a fully yellow crested presumed adult male at *c.* 3000/m asl in stunted moss forest at Wamena, close to Lake Habbema in the Baliem Valley of Irian Jaya, just south of the type locality (Fig. 1, 1). The bower consisted of a mat of ferns and *Selaginella* fronds, the branches above it being untidily draped with fern-like plants, possibly orchids, to a height of *c.* 2 m above the mat. Black pieces of charcoal and possibly of fungus were placed upon a horizontal branch about one metre above the bower mat. Having subsequently examined six colour photographs of *Archboldia* bowers taken at Mt. Hagen and Tari Gap (Coates 1990) DG feels the Wamena bower was similar in all respects to those of eastern New Guinea.

During 26 and 27 December 1991 KT visited and photographed what he believes to have been the same bower examined by DG. He saw a fully crested and presumed adult male bird close to the bower on both days. The bower consisted of an area of about one square metre of dead fern fronds laid on the ground and apparently flattened. To one side of this was a moss-covered crook in a tree *c.* 1 m above ground on which were placed six pieces of charcoal. A photograph obtained, whilst slightly out of focus, clearly shows a bower mat typical of those of male *Archboldia* in Papua New Guinea. This bower involved nothing remotely like an avenue of two walls of intertwined twigs as described to Ripley (1964). Both DG and KT considered the fully crested bird they saw at the Wamena bower to be inseparable from the adult male *A. p. sanfordi* illustrated in Beehler *et al.* (1986) and Coates (1990).

The above observations establish for the first time that (what we assume to be) adult male *Archboldia* in the Baliem Valley of Irian Jaya do develop a full and extensive yellow crest (contrary to Plate 54 in Beehler *et al.* 1986) as do males in Papua New Guinea, and that a single bower seen by two independent observers was typical of those of eastern birds. It would seem likely, therefore, that Ripley's informant gave a misleading or incorrect bower description. This was also the experience of Frith & Frith (1991) in the Tari Gap, Papua New Guinea, where local people initially repeatedly told them that *Archboldia* (having been shown the bird, with which they were previously unfamiliar) builds a stick bower like that of Macgregor's Bowerbird *Amblyornis macgregoriae* (a bird they were familiar with).

Notwithstanding the present apparently wide gap between the ranges of the eastern and western New Guinea populations of *Archboldia* (see Fig. 1) there now appears to be no justification for treating them as any more than at most poorly-defined subspecies of a single species, *A. papuensis*, that Coates (1990) thought could in fact prove to be monotypic.

Acknowledgement

We thank Brian Coates for providing constructive comment on a draft of this contribution.

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Additions to the list of new species of birds described from 1981 to 1990

by Norbert Bahr

Received 23 July 1994

In the centenary volume of this journal, Vuilleumier *et al.* (1992) reviewed the new species of birds described in the decade from 1981 to 1990 in continuation of earlier lists compiled by Zimmer & Mayr (1943), Mayr (1957, 1971), Mayr & Vuilleumier (1983), and Vuilleumier & Mayr (1987). As descriptions of novelties have been published in more than 70 different journals, books and occasionally appearing publications since 1950 alone, such compilations are of interest for most ornithologists occupied with avian taxonomy and give a welcome overview for persons engaged in other disciplines. Due to the publication of some descriptions in obscure journals and the inaccessibility of them even to reviewers working with extensive libraries, most of these lists were incomplete, and supplements had to be published in subsequent issues of the series for completion. To avoid such cases in future, LeCroy & Vuilleumier (1992) gave recommendations for the publication of species descriptions with which ornithologists will agree on the whole. In the latest list of Vuilleumier *et al.* (1992), however, no less than four new species were overlooked, at least three of them described in journals relatively easy of access. As some time may elapse until the next instalment appears with corrections and supplements to the 1992 list, it may be useful to add some information on the omitted taxa.

The following text is set out in the same way as in Vuilleumier *et al.* (1992), with the same abbreviations for the probable categories of the new forms: Ac=allospecies (member of a superspecies); Ba=*species inquirendae*.

Columbidae

Ducula constans Bruce 1989, *Riv. Ital. Orn.* 59: 219. 15°28′S, 125°40′E=near The Loop, Prince Regent River, Kimberley Division, Western Australia.

=*Ducula [bicolor] constans* (Ac)

According to the original description by Bruce (1989), *Ducula constans* is a not uncommon bird endemic to the Kimberley Division in northwestern Western Australia. It is an inhabitant of semi-deciduous vine forest, mangroves and waterside vegetation, and is subject to seasonal movements within the region. The name highlights the constancy of some plumage characters, especially the grey head, found in the series of 15 birds on which its separation as a new species is based.

Strigidae

Glaucidium hardyi Vielliard 1989, *Rev. Bras. Zool.* 6: 692. 20 km SW Presidente Médici, Rondonia, Brazil.

=*Glaucidium [passerinum] hardyi* (Ac)

This species has been confused with *Glaucidium minutissimum* until recently. It seems to be an inhabitant of the canopy region of Amazonian forests, locally sympatric with *G. brasilianum*, which prefers lower strata. There are records of *G. hardyi* from Brazil (Rondonia; Pará), Peru (Cordillera Vilcabamba; Depto. Ucayali), and Venezuela (Vielliard 1989, König 1991). In the field, *G. hardyi* is best told from *G. minutissimum* by its voice, a decreasing trill of 10–20 notes (König 1991). The closest relatives of the new pygmy owl, according to König (1991), are *G. jardinii* and the recently described *G. bolivianum.* Vielliard (1989) thought that there may be several as yet undescribed subspecies of *hardyi* from Amazonian Brazil and possibly Central America.

Trochilidae

Amazilia rondoniae Ruschi 1982, *Bol. Mus. Biol. Prof. "Mello Leitão" Santa Teresa, Sér. Zool.* 100: 1. Porto Velho, Rondonia, Brazil.

=*Amazilia (versicolor) rondoniae* (Ba)

This new hummingbird is based on two specimens (male and female) collected in September 1981 at the Rio Madeira. The male is depicted in Grantsau (1988), who treated *rondoniae* as a subspecies of *Amazilia versicolor*. Clearly, further information is needed to evaluate the taxonomic status of *A. rondoniae* correctly.

Formicariidae

Myrmotherula fluminensis Gonzaga 1988, *Bull. Brit. Orn. Cl.* 108: 132. 4 km southeast Santo Aleixo, Majé, Rio de Janeiro, Brazil.
=*Myrmotherula fluminensis* (Ba)

The present knowledge of this novelty, known from the unique type-specimen only, has been summarized by Collar *et al.* (1992). There is a remarkable similarity to a Peruvian form, considered as belonging to *Myrmotherula iheringi*, but more likely an undescribed taxon (Gonzaga 1988, Collar *et al.* 1992).

Acknowledgements

I wish to thank Rolf Grantsau and Dr Christoph Hinkelmann for the provision of literature, and Dr Günther Schleussner for examining the English draft of this paper.

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The sea-birds of São Paulo, southeastern Brazil

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Received 29 March 1994

Although it is one of the best studied regions of Brazil, there is little published information on the sea-birds that occur along the 350 km of the coast of São Paulo, most referring only to new or unusual records (Willis & Oniki 1985, 1993), although there is some information on the ecology of a few species (Rezende 1987). In this paper we present an annotated check-list of the 35 species of sea-birds known to occur along the São Paulo coast, and present new information on them, based mostly on records gathered from 1989 to 1994. English names and sequence follow Meyer de Schauensee (1970). Specimens are housed in the Museu de Zoologia de São Paulo (MZUSP) and Coleção Werner Bokerman (WCB).

Systematic list

MAGELLANIC PENGUIN *Spheniscus magellanicus*

A common winter visitor, penguins are known to appear every year, sometimes in numbers. This species has been recorded on almost every beach in the state, being represented mainly by immature birds, probably stragglers from the wintering areas off southernmost Brazil and Uruguay (M. Sander pers. comm.). Many beached penguins are sent to São Paulo Zoo. Records from August 1983 to November 1988 show 8 penguins received in July, 14 in August, 16 in September, 10 in October, 3 in November and 2 in December.

WANDERING ALBATROSS *Diomedea exulans*

A regular winter visitor to southern Brazil (Vooren & Chiaglia 1990, Sick 1993), apparently there is only one published record of the species in São Paulo, referring to a beach-washed individual found at Praia Grande (Willis & Oniki 1985). On 16 March 1993, we observed an adult individual (snowy plumage of Harrison 1985) about 30 miles off the coast near Alcatrazes archipelago (*c.* 24°05′S, 45°40′W).

ROYAL ALBATROSS *Diomedea epomophora*

Apart from the specimen cited by Pinto (1938), caught off Alcatrazes (MZUSP 16098), there is no further record of the species from São Paulo.

BLACK-BROWED ALBATROSS *Diomedea melanophrys*

The commonest albatross in the region; up to a few tens may be found dead or dying along the state's coast in a given year. Unlike the

Yellow-nosed Albatross, most recorded individuals are immature, but adults are occasionally found. The Black-browed Albatross seems to perform the same northward movement to the Rio de Janeiro upwelling area off Cabo Frio as the Yellow-nosed Albatross (Sick 1993). The lack of more museum records seem to reflect merely the absence of collecting.

Specimens recorded: five specimens at the MZUSP collected from 1931 to 1964 between Santos and Peruíbe, all were beach-washed, between July and September; Ilha do Cardoso, 3–4 Sep 1991 (skeleton at MZUSP); Praia Grande (near 24°05′S, 46°30′W), 11 Sept 1993, immature male (WCB); Itanhaem (near 24°15′S, 46°50′W), 18 Aug 1993, immature (MZUSP, cranium only); Praia do Julião, Ilhabela, 4 Oct 1993, immature (MZUSP, cranium only); Ilha Comprida, 9 Sep 1993, immature; 6 Jun 1992 (WCB); Santos (near 23°50′S, 46°15′W), early Jul 1993, adult (mounted at the Museu de Pesca de Santos).

YELLOW-NOSED ALBATROSS *Diomedea chlororhynchus*

Although there are few museum specimens or published records, dead albatrosses of this species are regularly found on the beach, and it seems to be a fairly common winter visitor, perhaps en route to and from the upwelling area off Rio de Janeiro, where Sick (1993) observed several individuals together with Black-browed Albatrosses. Nevertheless, both species are seen regularly off northeastern Brazil during the winter (M.C. Sousa pers. comm.), so movements to areas farther north than Rio do occur. A majority of records at the end of the winter may reflect a higher mortality during the southward migration.

New records: Ilha do Cardoso (*c*. 25°03′S, 47°53′W), 3 Sep 1991, adult, dead on beach; 5 Sep 1991, cranium found on beach; 9 Sep 1991, immature male (MZUSP 70633, skin); Ilha Comprida (*c*. 24°50′S, 47°45′W), 11 Sep 1993 (WCB); Praia do Engenho d'Água, Ilha de São Sebastião (better known as Ilhabela; near 23°50′S, 45°20′W), 4 Sep 1993, adult male (MZUSP, cranium only); Praia do Itaguassú, Ilhabela, 4 Sep 1993, immature (MZUSP, cranium only); specimen has a deformed, shortened and sideways bent upper bill, as seen in some pesticide-contaminated seabirds (M. Sander pers. comm.); Praia do Perequê, Ilhabela, 25 May 1993, immature (not collected); São Vicente, 10 Jul 1994, an adult found resting on the beach, banded and successfully released.

GREY-HEADED ALBATROSS *Diomedea chrysostoma*

The only records for the Brazilian coast are those of Sick (1993), off São Paulo and Santa Catarina, and of Teixeira *et al*. (1985), from Rio de Janeiro. In fact, the species seems to be rarely found north of Argentina (see Vooren & Fernandes 1989, Narosky & Yzurieta 1987).

On 23 Sep 1993 a starving immature male (MZUSP 73513) was found beached at the mouth of São Vicente Bay (near 23°50′S, 46°25′W). Its plumage agrees with the description given by Harrison (1985) for first-year birds. This is the second collected specimen from Brazil (see Teixeira *et al*. 1985).

SOOTY ALBATROSS *Phoebetria fusca*

Apart from a controversial bird collected in August at Bertioga beach (Willis & Oniki 1993), there is no other record of the species from Brazil.

SOUTHERN GIANT PETREL *Macronectes giganteus*

There is only one published record of the species from São Paulo, an immature collected at Peruibe (near 24°20′S, 46°50′W; Pinto 1964). An adult (white-feathered) bird was observed on 4 Dec 1993 at the same locality. Although rarely recorded in São Paulo, it is a fairly common winter visitor just to the south, off Paraná (Moraes & Krul 1993).

SOUTHERN FULMAR *Fulmarus glacialoides*

A bird from the sub-antarctic seas, recorded off southern Brazil only as a passage migrant (Vooren & Fernandes 1989). Willis & Oniki (1985) mention a bird from Ilha da Moela (24°03′S, 46°16′W). Two specimens were collected at Ilha do Cardoso, one in March (Martuscelli 1990), another on 18 Aug 1991 (skeleton at MZUSP). Another adult bird was observed fishing at the channel between Ilha do Cardoso and Ilha Comprida on 2 Jan 1991.

CAPE PETREL *Daption capensis*

A winter visitor recorded more frequently from the southern part of the coast. The MZUSP has one specimen from Iguape (near 24°41′S, 47°25′W; MZUSP 5321) and one from Peruíbe (dead on beach, 31 Aug 1934; MZUSP 37145). There is also a specimen from Marujá, Ilha do Cardoso, 4 Sep 1993 (WCB).

HOODED or ATLANTIC PETREL *Pterodroma incerta*

This species breeds in Tristan da Cunha and Gough, being occasionally recorded in eastern South America north to 1°31′S (Bourne 1992). Two specimens were collected at Ilha do Cardoso in early September.

DOVE PRION *Pachyptila desolata*

There are only three records of this south polar species from São Paulo. It seems to be less common than *P. belcheri.*

Specimens recorded: Santos, 4 Aug 1904, male (MZUSP 4730); Santos, 15 Jul 1910, sex? (MZUSP 8105); Ilha do Cardoso, 20 Jul 1991, female (MZUSP 70636).

SLENDER-BILLED PRION *Pachyptila belcheri*

Rarely seen on the sea, this species is known to suffer mass mortalities. A series of 10 individuals, all male, in the MZUSP, was collected at Praia Grande on 15 Aug 1954 after one such incident. It would be interesting to know the reason for such sex-biased mortality. The species has also been recorded from Iguape (no data, several specimens at the MZUSP), Guarujá (beach-washed, 7 Aug 1925, MZUSP 11119), São Sebastião (beach-washed, 15 Aug 1984), and Alcatrazes archipelago (seen alive at sea, 16 Mar 1993). A partial specimen (wings and tail only, MZUSP) collected in Santos on 18 Aug 1992 may also be referable to this species. All the specimens examined differ from the plate in Harrison (1985, p. 62) in having no white along the sides of the tail.

WHITE-CHINNED PETREL *Procellaria aequinoctialis*

Considered to be an abundant southern migrant off Brazil (Sick 1993). The MZUSP has several individuals found on the beach between Praia Grande and Iguape in June and July, and there are some later records. All belong to the nominate form, except for the Grajaúna bird, which represents a 2000 km northward extension for the range of *P. a. conspicillata* in coastal Brazil.

New records: Ilha do Cardoso, 8 Aug 1990 and Jun 1991; 29 Jul 1991, 4 Sep 1991, all adults (skeletons at MZUSP); 5 Sep 1991, adult; 13 Jan 1991, adult; Ilha Comprida, 4 Sep 1993, four adults dead on the beach; Grajaúna beach, Peruíbe, early May 1994, an adult bird caught alive on the beach, photographed and released.

CORY'S SHEARWATER *Calonectris diomedea*

This palearctic migrant is found off Brazil while migrating to and from the Mar del Plata area off Uruguay and Argentina (Vooren & Fernandes 1989, Sick 1993), but there are few published records, probably due to a lack of observers rather than to its scarcity. The only previous records are from Peruíbe and Ilha do Cardoso collected in April-May. Judging from wing-length and bill colour, specimens from São Paulo are referable to *C. d. borealis*.

New records: 20 miles off Guaratuba beach (near 24°00'S, 46°00'W), 27 Apr 1993, male, found dead on the sea, probably starved as weight only 560 g (MZUSP 73514); Perequê beach, Ilhabela, 27 May 1993, female, dead on beach, probably starved (MZUSP, skull only); many dead specimens, all adult, on beaches of Ilhabela between 28 May and 1 Jun 1994, including 21 along 1-km long Engenho d'Água beach (3 skins at the MZUSP); Ilha do Cardoso, 9 Jun 1991, cranium only; Ilha Comprida, 16 May 1994, five dead adult specimens along 7 km of beach; Una Beach, Peruíbe, 29 May 1994, four dead specimens along a 2-km stretch; Ilha Comprida, 21 Jun 1994, 18 old dead birds along 40 km of beach.

GREAT SHEARWATER *Puffinus gravis*

A southern Atlantic visitor, there are many recent records of this species from São Paulo: Ilha do Cardoso, in December, May and June; Peruíbe, in May (Martuscelli & Antonelli-Filho 1990).

New records: Ilha Comprida, 13 Oct 1991, two crania (MZUSP); Ilha do Cardoso, Dec 1989, adult male (skin at MZUSP); Una Beach, Peruíbe, 29 May 1994, three dead specimens along a 2 km stretch; Engenho d'Água beach, Ilhabela, 28 May 1994, adult male (skin at MZUSP), another dead specimen in 1 Jun 1994; Vila beach, 29 May 1994, adult, apparently mutilated by a shark; 15 miles SW of Alcatrazes archipelago, 10 Jun 1994, an adult bird seen circling the research boat; Ilha Comprida, 21 Jun 1994, two old dead birds along 40 km of beach.

SOOTY SHEARWATER *Puffinus griseus*

Considered to be an infrequent southern migrant by Sick (1993), the MZUSP has two specimens from Guarujá (near 24°00′S, 46°15′W) and São Sebastião (near 23°45′S, 45°25′W) collected in August and July, respectively.

New records: Ilha do Cardoso, 3 Mar 1991, 29 Jul 1991, and 21 Aug 1991, adults (skeletons at MZUSP).

MANX SHEARWATER *Puffinus puffinus*

A palearctic migrant fairly commonly recorded as a casualty on the beach, e.g., five at Ilha Comprida on 11 Sep 1993, another one at the same locality on 8 Oct 1993, all in adult plumage. Collecting dates of specimens at the MZUSP are September (one bird), and October (three individuals).

New records: Ilha do Cardoso, 3 Mar 1991 adult (skeleton at MZUSP); 4 Oct 1992, adult; 2 Jan 1991, another adult, both banded in the U.K. Itaguassú beach, Ilhabela, 29 Sep 1993, adult, banded in Bardsey Island, Wales, in July 1979. Santos, 26 Sep 1993, two starving adult males still alive at the beach (MZUSP 73702 and 73703).

WILSON'S STORM-PETREL *Oceanites oceanicus*

Mainly a winter visitor from the southern seas (Sick 1993), the MZUSP has specimens collected in May and July.

On 27 Apr 1993 nine individuals, alone or in pairs, were sighted between Santos and Alcatrazes on a cruise about 20 miles off the coast, another two along the same transect two days later. During a journey to the same islands, Luederwaldt & Fonseca (1923) also saw several birds in early October. Six birds were seen in the strait between Cardoso and Comprida islands on 17 May 1994, an area dominated by mangrove swamps.

Vooren & Fernandes (1989) report the species as occurring off Rio Grande do Sul between April and September, alone or in small groups, which agrees with the observation above, and Sick (1993) observed groups of them in the upwelling area off Rio de Janeiro in May. It is possible this is another species that migrates to upwelling areas during the winter, like the albatrosses.

BROWN BOOBY *Sula leucogaster*

A common resident, this species is known to breed at several islands: the Alcatrazes archipelago, Laje de Santos (24°14′S, 46°16′W), Queimada Grande (24°30′S, 43°24′W), Guaraú (24°22′S, 46°50′W), Castilho (25°20′S, 47°50′W), Cabras (23°44′S, 45°02′W), Sumítica (23°50′S, 45°09′W) and, formerly, at Bom Abrigo (25°08′S, 47°48′W), where it was recently wiped out by introduced domestic cats.

There are about 1000 breeding pairs at Alcatrazes, 300 at Laje de Santos, and 500 at Castilho, while the other islands remain to be censused. We believe there are *c*. 2000 breeding pairs of boobies along the state's coast. Breeding occurs year-round, peaking in September-November.

Birds banded at Castilho have been recovered between 21°10′S, 40°09′W and 27°35′S, 48°25′W, an 1800 km stretch. Those that dispersed farther were juveniles; adult birds tended to remain near the colony.

This seems to be an accident-prone species, as broken-winged individuals are often found along the beaches of the southern coast after storms.

MAGNIFICENT FRIGATEBIRD *Fregata magnificens*

One of the most common sea-birds in the state, this resident is known to breed at Alcatrazes (about 6000 birds) and Ilha do Castilho (3000 birds). It is interesting to note that in the 1920s there were only about 1000 birds at Alcatrazes (Luederwaldt & Fonseca 1923), the subsequent increase being probably due to the large food resources represented by the many shrimp trawlers that discard unwanted fish near the island. Breeding occurs year-round, with a peak from November to February.

SOUTH POLAR SKUA *Catharacta maccormicki*

Luederwaldt & Fonseca (1923) reported seeing an unidentified skua while cruising to Alcatrazes archipelago in early October. The only documented record of this antarctic visitor was a bird reported by Willis & Oniki (1985, 1993).

On 11 Aug 1993 a starving female was found at Embaré beach, Santos (MZUSP 73519). This bird seems an intermediate between the dark and light morphs of the species. A dark-morph bird was observed at the southern tip of Ilha Comprida on 8 Oct 1993 while robbing fish from a Cayenne Tern. On 15 May 1994, at Cananéia Bay (close to Ilha do Cardoso) another dark-morph bird was observed sitting on the water. Two days later, 70 km south, at Paranaguá Bay, lone birds were seen killing and eating a Cayenne Tern, and attacking but not killing a Brown Booby, which escaped because the observers' presence disturbed the skua.

PARASITIC JAEGER *Stercorarius parasiticus*

Pinto (1964) reported a record of this species from Peruíbe. Apparently, this is the only record from São Paulo.

KELP GULL *Larus dominicanus*

Common all over the coast and a commensal at sea-ports and fish-landing points, this species is known to breed at Alcatrazes and Castilho, and probably at other islands. Breeding takes place between August and December. Its numbers decrease markedly during the winter. Flocks usually rest on the least disturbed beaches, and can number up to 150 individuals.

BROWN-HOODED GULL *Larus maculipennis*

Occasional in São Paulo, this is mainly a southern species (Sick 1993). On 14 Jun 1991, an adult was seen feeding on the beach with 36

Kelp Gulls at Ilha Comprida, and one was sighted again at the same place in January 1992.

LARGE-BILLED TERN *Phaetusa simplex*

This tern is recorded in southeastern Brazil only outside the breeding season (Sick 1993). All records from the southern coast (Ilha do Cardoso and Ilha Comprida) between 1991 and 1993 were from July to November; they were common during this period, usually associated with mixed flocks of *Sterna* spp., Kelp Gulls and Black Skimmers. Also, on 4 May 1994 two non-breeding adults were observed resting together at the Cubatão mangroves. Pinto (1964) also records specimens from around Santos, São Sebastião and Iguape, all being immature birds (specimens at MZUSP).

GULL-BILLED TERN *Gelochelidon nilotica*

The only record of this species is the one reported by Pinto (1964), a first-winter female collected at Peruíbe in early April (MZUSP 35357).

SOUTH AMERICAN TERN *Sterna hirundinacea*

Absent from the northern coast (Ilhabela) only during the summer, this species is greatly outnumbered by Cayenne and Royal Terns south of Santos, where it usually comprises only 10% of the thousand-strong mixed-species tern flocks found there. On 4 Sep 1993 a breeding colony of about 100 pairs was located on a small islet just 200 m from a beach to the west of Ilhabela. Nests with eggs, some just pipping, were noted. A month later several well grown chicks could be found, as well as immature flying birds. By late November the birds gather in large flocks at the northern mouth of the channel between Ilhabela and the mainland, disappearing by early December.

According to the local people, the birds start breeding around June, which agrees well with the presence of adults in breeding plumage from early May, but birds in breeding plumage may be seen until at least November, so breeding may be protracted or not so synchronous. In 1994 the colony moved to Ilhote do Codó (23°55′S, 45°18′W), a 0.6 ha islet just south of Ilhabela. More than 250 birds were nesting there in July. The species breeds regularly only around Ilhabela; it is an infrequent breeder at Ilha do Castilho, with 30 pairs nesting during August 1988 and 1990.

The seasonal disappearance of this species from São Paulo agrees with the presence of large flocks along the Patagonian coast, from Chubut to Tierra del Fuego (pers. obs.). Birds seen in Argentina were mainly in breeding plumage, but there is no known breeding colony there, and birds are absent after summer.

In the MZUSP collection, there are seven breeding-plumage birds collected in early to late September, all between Iguape and Praia Grande.

COMMON TERN *Sterna hirundo*

This northern-hemisphere breeder has apparently been recorded only by Willis & Oniki (1985). On 27 Apr 1993 two individuals in non-breeding plumage were seen together in a large flock of Cayenne Terns resting on the sea just off Guarujá. We have also observed this species as a member of the mixed-species tern flocks at Ilha Comprida and Ilha do Cardoso between May and August, where it comprises about 3% of all individuals. Despite the previous scarcity of records, this species is a regular visitor, being recorded every year.

ARCTIC TERN *Sterna paradisaea*

Pinto (1964) reported the species as being recorded at Itanhaem, but apparently no specimen has ever been collected in the state.

SNOWY-CROWNED TERN *Sterna trudeaui*

Although recorded from the northern coast between October and December (Pinto 1937; two non-breeding adults from Ilhabela and São Sebastião at the MZUSP), this species seems uncommon there. Two specimens in breeding plumage were seen following a boat just off Guarujá on 27 Apr 1993; another, in non-breeding plumage, was with a flock of Cayenne and Royal Terns at Praia Grande in late August.

On the southern coast it is a regular winter visitor, being recorded in small numbers (3% of all terns observed) only during July, associating with other species of terns. These flocks comprise up to 1000 terns of several species, in breeding plumage.

YELLOW-BILLED TERN *Sterna superciliaris*

All records of this species are associated with muddy banks and beaches: a lone non-breeding adult at the mangroves of Cubatão on 27 Apr 1993, also 4 May 1994; another at Ilha do Cardoso on 16 Aug 1991, an immature at Ilha Comprida on 14 Jun 1991, and an adult at the same locality in 12 Dec 1993, together with Royal and Cayenne Terns. On 25 Feb 1994 an adult was observed resting on the beach at Picinguaba (23°15′S, 44°50′W). Our data agree with the three MZUSP specimens, all collected in mangrove areas.

One breeding male was collected in September at Cubatão (MZUSP 7927), and a female from the same area, starting to moult into breeding plumage, was collected in late June (MZUSP 7928).

ROYAL TERN *Sterna maxima*

Previously known to breed in the northern hemisphere, Guyana and Argentina, and also west Africa (Escalante 1985, Harrison 1985), we have recorded adults in breeding plumage at Praia Grande (August), Ilha do Cardoso and Ilha Comprida (September and October), together with non-breeding individuals. The species has been observed year-round at Ilha do Cardoso and Ilha Comprida, being a common component of mixed flocks of terns, gulls and skimmers, comprising 20% of all terns.

On 24 Oct 1993, a breeding colony of Royal Terns was found at Laje de Santos, the first one to be discovered in Brazil (see Escalante 1985).

Although common on the south coast, this tern is rare around Ilhabela, with the sighting of lone birds in May-July; but in late

February 1994, a mixed flock of 16 Royal (12 in post-breeding plumage, 4 immatures) and 9 Cayenne Terns (all immatures) was observed further north on Picinguaba beach. The MZUSP has several specimens in moult from eclipse to breeding plumage collected in July-August, most from Peruíbe and Praia Grande.

CAYENNE TERN *Sterna eurygnatha*

A common species along the Brazilian coast (Sick 1993), its reproduction has been poorly documented. We have observed a few (10% of all birds) adults in breeding plumage at Praia Grande on late August; their proportion had increased to 80–100% of all individuals at Ilha Comprida in September-October. The only known breeding colony in the state is located at Ilha do Castilho, with about 40 pairs reproducing between July and August.

It is uncommon around Ilhabela, with the brief appearance of immature birds in the area in late April–early September, usually alone but congregating around fishing boats. Nevertheless, there is a breeding female from São Sebastião in the MZUSP (2195), collected in early August, and flocks of around 30 non-breeding birds have been observed on coastal islets 10 miles north of Ilhabela in April.

This seems to be the most common tern south of Santos, groups of which, often with Royal, Snowy-crowned and South American Terns, are a daily sight at some little disturbed sandy beaches. The only records we have from Ilhabela are of a few adult (breeding plumage) and immature birds sighted only after late September, mainly on the east coast.

BLACK SKIMMER *Rhynchops nigra*

Said to be mainly a freshwater bird that occurs along the coast only during migration (Sick 1993), we have found this species at the Cubatão mangroves in late April and in early May, in flocks of a few hundreds, and also fishing during the night at nearby São Vicente bay in April and May. At Ilha Comprida and Ilha do Cardoso the Black Skimmer has been recorded from February to October, in small flocks of up 30 individuals associated with terns and gulls.

Discussion

The greatest diversity of sea-birds is recorded during the end of the winter and beginning of spring (August-September), when most northern hemisphere and sub-antarctic birds occur off São Paulo. Some northern-hemisphere birds seem to be present only as passage migrants en route to wintering areas off southern Brazil, Uruguay and Argentina (e.g. Cory's and Manx Shearwaters), but some of these, like the Common Tern, together with sub-antarctic birds such as the albatrosses, storm petrels and probably the prions, may be wintering off São Paulo. Also, most sea-birds that breed in the area gather at their colonies during the winter, further increasing both species diversity and number of birds during the winter.

The records of southern visitors, and also Sick (1993), suggest that most sub-antarctic birds are regular, not accidental, visitors, and a regular northward movement of those species occurs during the winter, perhaps directed towards upwelling areas rich in food, as those off Cabo Frio, Rio de Janeiro, or other high-productivity areas like those of southern São Paulo. Records made by boats travelling offshore show antarctic and subantarctic species to be far more common off eastern South America than can be judged from beach-washed birds (Bourne & Curtis 1985).

The productivity of the southern and central coast of São Paulo is linked to the great mangroves of Iguape-Cananéia-Ilha Comprida and Santos-Cubatão-Bertioga, and it is no surprise that most records come from these areas, mainly of coastal species. The waters of the northern coast have their productivity linked to the penetration of cold, nutrient-rich waters, a seasonal phenomenon that occurs during the winter, also noticed on the southern coast.

The occurrence of both northern-hemisphere and sub-antarctic migrants in northeastern Brazil, in waters that receive the input of nutrients from the São Francisco river, strengthens the idea that associated mainland environments have an important effect on the wintering areas of pelagic birds, especially in dystrophic seas (Azevedo-Junior 1992, Sousa 1993), the presence of wintering birds being probably related to the occurrence of nutrient-enriching factors like extensive mangroves or large estuaries. This may explain the apparently anomalous presence of skuas and Hooded Petrels at Maranhão and near the Amazon estuary (Tucuruí) (M. Sander pers. comm., Teixeira *et al*. 1986).

A factor probably responsible for the prevalence of beach-washed records around September in southeastern Brazil, and for the seasonal occurrence of mass mortalities of sea-birds elsewhere (see Azevedo-Junior 1991, Souza 1993), are the strong winds associated with cold fronts which travel north from the Antarctic. These winds, in southeastern Brazil, tend to be stronger during September-October, when the temperature difference between the Antarctic front and the tropical, warm air over the area is greatest. Strong winds up to 80 km/h occur during this period, but they are unpredictable and of short duration, lasting 15–30 minutes. Sea-birds caught by such sudden winds may be thrown into the water and drowned, especially Procellariiformes soaring with wings locked open. The finding of dead birds with broken wings, and the fact that mortalities of sea-birds happen earlier to the north, strengthen the hypothesis.

All breeding colonies of sea-birds in São Paulo are located on islands, but most suffer human disturbance. The Alcatrazes archipelago, which harbours the largest colonies of boobies and frigatebirds in southeastern Brazil, is a bombing-practice ground for the Brazilian Navy. Fishermen and Navy personnel disturb the birds at Laje de Santos, although it is an officially protected area. Egg-robbing is common at Ilha do Castilho and Laje de Santos, despite its protected status. Uncontrolled tourism is doing no good to all those areas, and also many others.

Conservation of the off-lying islands, where a minimum of 35 endemic plant and animal taxa occur, of the mangroves, and also of the few sand beaches where the birds do not yet have to compete for space with people, is a conservation priority for the sea-birds of São Paulo, and concerted efforts must be made to assure their survival.

Acknowledgements

We wish to thank Fausto Pires de Campos for the opportunity of participating in several cruises to Alcatrazes; Dr. Werner Bokerman for access to the penguin data; to the staff of Museu de Pesca de Santos, for giving us some of the specimens; to Dr. W. R. P. Bourne for making useful comments and providing information on some birds; and to Dr. Helio Camargo, for allowing access to the MZUSP collection. Special thanks to Dr. Rubens J. Villela, for explaining the wind dynamics in southeastern Brazil, and to Octavio and Rosana (DPRN-Cananéia) for their friendship and help during fieldwork.

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The Himalayan bird collection of the Marquis Paolo Solaroli, "Prince of Sirdanah", and the type locality of *Oedicnemus indicus* Salvadori, 1865

by P. Passerin d'Entrèves, C. G. Violani & A. Rolando

Received 19 May 1994

The Zoological Museum of Turin University owns a small but fairly complete collection of Himalayan birds, known as the "Solaroli Collection", which was entered in 1841 as a gift from "the Prince Solaroli of Sirdanah" (Salvadori 1915).

Paolo Solaroli (Novara, 8.XII.1797—Turin, 1878), when he came of age, travelled in Italy and part of Europe with the final intention of reaching America. Having entered the service of the pasha of Egypt, he remained in the Egyptian army for some years, later visiting Bombay and Calcutta. Here he found a job in a factory for the production of indigo, and in the following years he became superintendent of numerous factories. He married one of the daughters of the Begoum of Sirdanah, a rajate at the foot of the Himalayas, and became Commander of the local Body Guards, Colonel and Chief Justice with important appointments at the Court.

When Solaroli finally returned to Italy, he was created Baron by the King of Sardinia Carlo Alberto, and took part in the First Italian Independence War in 1848, earning various decorations for military valour. He was also aide-de-camp of King Victor Emmanuel II during the historic meeting in Teano with General Giuseppe Garibaldi (26.X.1860), was elected deputy in several legislatures and was finally created Marquis of Briona.

From a letter now preserved in the Turin State Archives, dated "Mussorie nelle Himalaye" 13 February 1841 and addressed to the then Ministry for Foreign Affairs, we are aware of the shipping of 444 bird skins belonging to 226 species, labelled with English and Indian names by Solaroli himself, as a gift to King Carlo Alberto. The collection was entrusted to the Zoological Museum of the University of Turin, at that time directed by Giuseppe Gené. His cataloguing of Indian birds was subsequently revised by Tommaso Salvadori with updated scientific names. Today the "Solaroli Collection" (Section E of the Ornithological Department) includes 369 specimens. Those now missing were exchanged with other museums or were disposed of, as they were irreparably damaged by insects (Elter 1986).

The Solaroli Collection has never been the object of a monographic study, and only two specimens from it (nos. 4086, 4087) were used as syntypes for the description of a new species, namely *Oedicnemus indicus* Salvadori, 1865, *Atti Soc. Ital. Sci. Nat.* 8: 375, from "India". Other material was designated as pertaining to a new taxon by Giuseppe Gené, but this was never published validly: "*Oriolus decipiens*" Gené Ms. [=*Oriolus oriolus kundoo* Sykes (Salvadori 1864)].

It has now been possible to restrict, at least in part, the type locality of the Indian Stone Curlew *Oedicnemus indicus* Salvadori [now *Burhinus oedicnemus indicus* (Salvadori)] to: the surroundings of Mussoorie, in Uttar Pradesh in "the Great Himalayas starting from their origin [="il gierme" in Solaroli's letter] up to 17,000 feet above sea level" (obviously in the former rajate of Sirdanah). The two unsexed syntypes, still preserved in the Zoological Museum of Turin University, are both labelled as from "Jmalajas" and are inscribed "Typus!" in Salvadori's handwriting. They are in fairly good condition and their measurements (in mm) are, respectively: UCC-E58-4086 (culmen from feathers 40, from skull 42; flattened wing 205; tarsus 84; tail 109); UCC-E175-4087 (culmen from feathers 39, from skull 44; flattened wing 215; tarsus 86; tail 119).

Acknowledgements

We are greatly indebted to Marquis Carlo Alberto Solaroli di Briona for providing us with biographical information concerning the Solaroli Family, and to Dr Nigel J. Collar for kindly revising an earlier draft of this paper.

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The third known specimen of the Red-tailed Newtonia *Newtonia fanovanae* (Family Sylviidae), a Malagasy endemic

by Steven M. Goodman

Received 4 July 1994

In 1933 Gyldenstolpe named a new species, *Newtonia fanovanae*, on the basis of a single specimen taken in the Fanovana Forest (18°55′S, 48°34′E), east-central Madagascar. The forest near Fanovana has been subsequently cleared, and until recently there was no other record of this species on the island. *N. fanovanae* was found at two widely separated rainforest sites: (1) southeast portion of the Eastern Humid Forest, parcel 1 of the Réserve Naturelle Intégrale d'Andohahela (24°34′S, 46°49′E), where one specimen was collected and several individuals observed in late 1989 between 300 and 1300 m elevation (Goodman & Schulenberg 1991); and (2) in the northeastern part of the Eastern Humid Forest, Réserve Spéciale d'Ambatovaky (16°51′S, 49°08′E), where it was observed twice in February 1990 between 650 and 700 m elevation (Evans 1991). Further, this species has recently been reported at several other sites in the Réserve Naturelle Intégrale d'Andohahela (Goodman, Pidgeon & O'Connor pers. obs., Langrand & Sinclair 1994), and at Hiaraka (15°30′S, 49°56′E) on the Masoala Peninsula, southeast of Maroantsetra, at 250 m altitude (Langrand & Sinclair 1994).

Recently while examining Malagasy bird specimens in the American Museum of Natural History (AMNH), New York, I found a specimen of *Newtonia fanovanae* that had been mis-identified as a Red-tailed Vanga *Calicalicus madagascariensis*. The specimen (AMNH 413023), an adult female, was taken at "Maroantsetra, 40 km NW" on 22 May 1930 during the Mission Zoologique Franco-Anglo-Américaine. *N. fanovanae* had not been previously listed as a species collected during the mission (Delacour 1932, Rand 1936). This specimen represents the third known example of *N. fanovanae* in museum collections. The general plumage colouration and external measurements of this bird fit those of the other two known specimens (Goodman & Schulenberg 1991, Table 1).

In the mission's itinerary, Rand (1936, p. 183) states, "On May 5 . . . we stopped at Bevato (forty kilometers northwest of Maroantsetra), a little village [along the Vohemar River] . . , [and] collected until 26 May." The village of Bevato is close to sea-level and was near the edge of a tall humid forest with abundant epiphytic growth. The group collected birds near the village and up to 500 m altitude. The coordinates given by Dee (1986) for Bevato, 45 km NW of Maroantsetra, up Vohemar River, are in error and are for another village of the same name several hundred km further south. Jenkins (1987) listed the coordinates for the Bevato "40 km NW of Maroantsetra" as 15°19′S, 49°32′E. Both MacPhee (1987) and Carleton

TABLE 1
Some measurements (mm) of the three known specimens of *Newtonia fanovanae*

	Fanovana type, SMNH	Andohahela FMNH 345890	SW Maroantsetra AMNH 413023
wing length	60	60	57
tail length	43	43	40
bill length from skull	14.5	14.8	15.1
length of exposed culmen	10.7	12.1	11.2
bill length from anterior edge of nostril	7.9	9.0	8.0
width of bill at anterior edge of nostril	3.0	2.8	3.1
tarsus length	16.3	16.9	17.4

Notes. SMNH—Swedish Museum of Natural History; FMNH—Field Museum of Natural History; AMNH—American Museum of Natural History.

& Schmidt (1990) have accepted the site of "40 km NW Maroantsetra" as near Hiaraka, and the latter authors have provided the coordinates of 15°10′S, 40°30′E. (This is a different Hiaraka from that mentioned by Langrand & Sinclair 1994.)

The discovery of this previously mis-identified specimen extends the range of *Newtonia fanovanae* further north, and it is now known from nearly the complete length of the island's east side. To date all records of this species are from Eastern Humid Forest and below 1300 m altitude.

Acknowledgements

I am grateful to G. Barrowclough and M. LeCroy, American Museum of Natural History, and C. Edelstam and E. Åhlander, Swedish Museum of Natural History, for access to the specimens under their care.

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Canyon Wren *Catherpes mexicanus* in humid lowlands of Mexico, with notes on near sympatry with other rock-loving wrens

by Héctor Gómez de Silva Garza

Received 7 July 1994

The Canyon Wren *Catherpes mexicanus* is found from southern Canada to southern Mexico. In the latter country, it is usually considered to be absent from the humid, forested lowlands of the Atlantic (Gulf) slope. AOU (1983) mentions that this species occurs "usually in arid regions . . . in the Mexican higlands to . . . central Chiapas and western Veracruz" but not in the lowlands of these states. Peterson & Chalif (1973) state more explicitly "not on Gulf coastal slope" and Phillips (1986) notes "absent from coastal lowlands" (except extreme northwest).

Edwards (1989) lists the Atlantic lowlands of Nuevo León and Tamaulipas, but not farther south, in this species' range. Alcántara (1993: 193) notes one Veracruz record of the species from 100 m above sea level (asl) or lower, all other records from that state being above 1100 m. The Canyon Wren is usually common to abundant where found, and has a loud and often-repeated song. It is therefore unusual that there should be a gap of 1000 m in its altitudinal range in the state of Veracruz. More likely, the species is very localized and has been under-recorded in that state and perhaps elsewhere in the Atlantic lowlands of Mexico.

In recent travels to different parts of Mexico, I have recorded this species in the Atlantic lowlands of Chiapas and at two localities in the lowlands of Veracruz.

In central Veracruz, southeast of Jalapa, the Canyon Wren is common at approximately 800 m asl near the bottom of the Barranca de los Jiménez (19°26′N, 96°48′W) and at approximately 450 m asl in the Barranca de Zinacatla (19°20′N, 96°47′W). The other birds seen in these andesitic canyons are typical of the humid lowlands of Mexico's Atlantic slope, such as Little Hermit *Phaethornis longuemareus*, Sulphur-breasted Toucan *Ramphastos sulphuratus* and Giant Cowbird *Scaphidura oryzivora*.

In Chiapas, the Canyon Wren is found at 200 m asl in the limestone canyon of the lower Río La Venta (*c.* 17°2′N, 93°48′W) (Alvarez del

Toro 1985; pers. obs.). This canyon winds through tropical rainforest which contains such Atlantic lowland species as Great and Slaty-breasted Tinamous *Tinamus major* and *Crypturellus boucardi*, Slaty-tailed Trogon *Trogon massena* and Rufous Mourner *Rhytipterna holerythra*.

Thus, in the southern part of Mexico, the Canyon Wren is indeed found on the Atlantic slope, in humid regions. However, it is absent from the humid forests on karstic terrain where the similar *Hylorchilus* wrens are found, though in Chiapas it approaches, to within 1 km, the range of Nava's Wren *Hylorchilus (sumichrasti) navai* in the lower Río La Venta canyon. In semi-arid regions, the Canyon Wren's range also closely approaches that of the Rock Wren *Salpinctes obsoletus*. In eastern Querétaro, the Canyon Wren is found in and around the cliffs at Cerro La Tembladera (21°5′N, 99°40′W), whereas the Rock Wren is found farther from the cliffs and talus in desert scrub with scattered rocks. In the central valley of Oaxaca, the Canyon Wren is found on and near the cliffs at Yagul (16°59′N, 96°30′W), whereas the Rock Wren is found at Monte Albán (17°2′N, 96°44′W), where there are no cliffs.

Acknowledgements

I am grateful to my companions in the field trips to the above-mentioned localities, particularly Sergio Aguilar, Fernando González, Adam Kent, Ignacio March, Claudia Moreno, Ernesto Ruelas and Don Antonio of Jalcomulco; and to Dr Ismael Ferrusquía-Villafranca for identifying rock specimens from the localities. This is contribution number 7 of New Distributional Information on Mexican Birds.

References:

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Alvarez del Toro, M. 1985. *¡Así era Chiapas!* UACH, Tuxtla Gutiérrez, Chiapas, Mexico.

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Address: Héctor Gómez de Silva G., Xola 314-E, 03100—México, D.F., México.

More anecdotal evidence of the type-locality of *Chalcomitra rubescens stangerii*

by Amberley Moore

Received 2 August 1994

Amadon (1953) proposed that Shelley's assumption that *Chalcomitra rubescens stangerii* Jardine was collected by Thomson on Fernando Po [Bioko] should be accepted, and that the implication in Jardine's description (*Ann. Mag. Nat. Hist.* 1842, p. 187) that it was collected on the Niger should be disregarded.

Anecdotal evidence of the collection of the type of *C. r. stangerii* on Fernando Po is given in the account of the Niger Expedition written by Allen & Thomson (1848). Thomas R. H. Thomson, MD, RN, was appointed Assistant Surgeon of HMS *Wilberforce* and was a corresponding member of the Zoological Society of London. Places and dates in the narrative are corroborated by entries in the Captain's log of the expedition's ships, the *Wilberforce* and the *Albert* (P.R.O.Adm.51, 3706, 3549). The second volume of the Narrative contains a list of 46 birds collected during the expedition, 6 of which were collected by Thomson, including '*Nectarinia Stangeri*'. The list contains several errors and it would be unsafe to rely on it entirely, but the account of the collection of *N. r. stangerii* is particularly detailed.

> "Habitat. Fernando Po, West Africa, . . . when the papaw (*Papaya carica*) [*Carica papaya*] is in flower, its sweet juice is the favourite food of these and other *Cinnyridae*. The specimen from which Sir W. Jardine figured the *C. Stangeri*, was shot by Dr. Thomson, who presented it to Dr. Stanger, as also others to the British Museum."

There is also an account in the text (Vol. 2, p. 222) of a collecting expedition in April 1842 by Thomson and C. G. Roscher to Jamieson's settlement at Shark River "near Bassa-pu", not far from Clarence [Malabo] in the north of the island. Here, '*Cinnyris Stangerii*' is noted as 'very abundant' and most of the sunbirds collected there were from the vicinity of a single *Carica papaya*, a species not indigenous to West Africa, suggesting that it was in a well settled, cultivated, locality. Thomson refers here to sending *N. r. stangerii* to England by Dr William Stanger (not, as Shelley, Dr Strange) who was geologist to the expedition and in whose honour Jardine was to name the bird. It is tempting to think that this is a description of the collection of the type but it is unlikely, Stanger had already returned to England by this time. It seems most likely that the bird was collected near Basupú (3°43′N, 8°41′E) on the northwest coast of Fernando Po between 20 October 1841 when Thomson went ashore there and 22 November 1841 when Stanger left the island.

Other species collected by Thomson during the expedition and presented to the British Museum, notably *Porphyrio alleni* and *Hirundo nigrita*, are in the collection of that Museum at Tring, but, as Amadon reported, the type of *Chalcomitra rubescens stangerii* does not seem to be held there. George Waterhouse gave a small collection brought back by Stanger to Jardine for examination and it is suggested that Jardine subsequently returned it directly to Stanger (letter Waterhouse to Jardine, 10 August 1842). *N. r. stangerii* is not listed in the register of acquisitions of the British Museum for 1842 (although Stanger and Thomson's visit there on 22 September 1842 is recorded), nor is it listed in the Jardine sale catalogue.

Almost directly after returning to England from West Africa Stanger took up an appointment as Surveyor General of Natal, where he died in 1854.

After his death his collections were purchased by public subscription in his home town of Wisbech and presented to the museum there, but there is no record of bird skins in this collection, nor has it been possible to find any of Stanger's notes or papers relating to the Niger Expedition.

Acknowledgements

I am most grateful to Dr Carlo Violani and Mrs F. E. Warr for many helpful suggestions and to Dr Richard Liversidge who made extensive enquiries in South Africa for any material relating to William Stanger.

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Allen, W. & Thomson, T. R. H. 1848. *A Narrative of the Expedition to the River Niger in 1841*. Richard Bentley, London.

Amadon, D. 1953. Avian systematics. *Bull. Am. Mus. Nat. Hist.* 100: 429–430.

Address: Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K.

BOOKS RECEIVED

Denton, M. L. 1995. *Birds in the Yorkshire Museum*. Pp. vi+216. Yorkshire Museum. ISBN 0-905807-10-3. £7.50. (Order from The Yorkshire Museum, Museum Gardens, York YO1 2DR, adding £1.50 for p. & p.; cheques payable to North Yorkshire County Council.)

The bird collections in the Yorkshire Museum are among the more important of the collections in provincial museums. This catalogue—from Bill Oddie's Foreword "believed to be the first of its type from a non-national UK museum"—gives a summary, in systematic order, of all species represented, as skins, mounted specimens, skeletons or eggs. Dates and localities are given, and any other information of interest. The data for the extensive, almost entirely British, egg collection are rather limited, as also for the small skeleton collection. Among the surprising 'discoveries' in the skin collection are an American Kestrel, collected in Yorkshire in May 1882 and apparently the first European record, and what is probably the first French record of a White-crowned Black Wheatear, collected in 1884, both at present under consideration by the respective national records committees. This publication greatly increases the value of the Yorkshire Museum collection by making knowledge of it accessible to a wide public.

Winkler, H., Christie, D. A. & Nurney, D. 1995. *Woodpeckers*. Pp. 406, 64 colour plates, distribution maps. Pica Press (Helm Information Ltd). ISBN 1-873403-25-9. £30.00.

Another outstanding addition to the growing number of guides to bird families. It follows the now well-tried layout: introductory sections covering family characters and relationships, taxonomy, morphology, behaviour etc.; plates in a block, with main identifying characters and range summaries on the facing pages; main text under standard headings accompanied by a small but adequate distribution map for each species and some text-figures, mostly showing distinctive flight patterns. The plates, sensibly showing birds in strictly standardised side view with extra heads and other details as necessary, are excellent, beautifully drawn and painted and faithfully reproduced.

The debt owed to Lester Short's 1982 monograph is fully acknowledged. Nothing like the same detail is attempted in the present work, which will certainly reach a much wider readership among non-specialists, though it is hard to imagine a woodpecker specialist who will not also acquire it.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the Editor, Dr D. W. Snow, The Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*.

A contributor is entitled to 10 free offprints (16 if 2 or more authors) of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Additional offprints or offprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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Only Members of the British Ornithologists' Union are eligible to join the Club; applications should be sent to the Hon. Treasurer, as below, together with the annual subscription (£8.50 or, if preferred, U.S. $22 for 1995, postage and index free). Changes of address and any correspondence concerning membership should be addressed to the Hon. Treasurer.

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The *Bulletin* (Vol. 115 onwards) may be purchased by non-members on payment of the annual subscription (£20 or, if preferred, U.S. $40 for 1995, postage and index free). Applications should be sent to the Hon. Treasurer. Single issues may be obtained as back numbers.

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PAYMENTS TO HON. TREASURER

Payments should be sent to the Hon. Treasurer, S. J. Farnsworth, Hammerkop, Frogmill, Hurley, Maidenhead, Berks SL6 5NL, U.K., or credited direct to the Club's bank account—No. 10211540, Sort Code 20 00 87, at Barclays Prime Account, Dale House, Wavertree Boulevard, Liverpool L7 9PQ, U.K., with confirmation to the Hon. Treasurer. All payments are net and should be in Sterling if possible. Payment in other currencies must include a further £4 for U.K. Bank Charges (except for annual rates in U.S. Dollars which are inclusive).

CORRESPONDENCE

Correspondence about Club Meetings and on all other matters should go to the Hon. Secretary, Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K.

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

COMMITTEE

Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

ISSN 0007-1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 115 No. 3 September 1995

FORTHCOMING MEETINGS

Please note that because of the national rail strike the Annual General Meeting which had been adjourned until 18 July 1995 had to be postponed and will now be held on Tuesday 19 September 1995 at 6 p.m.

Tuesday, 14 November 1995. Dr T. J. Roberts will speak on **"The Birds of the Himalaya"**. Dr Roberts is the author of the much-acclaimed *The Birds of Pakistan* and his talk to the Club in 1990 was of very great interest.

Those wishing to attend are asked to notify the Hon. Treasurer by Tuesday, 31 October 1995.*

Tuesday, 12 December 1995. Mr R. P. Martins will speak on **"The Birds of Socotra"**. Mr Martins, a Council Member of OSME, has made the birds of the Gulf of Aden his particular study.

Those wishing to attend are asked to notify the Hon. Treasurer by Tuesday, 28 November 1995.*

Tuesday, 23 January 1996. Ms Rachel-Mai Jones will speak on **"Ringing and Ornithological Research in Latvia".**

*Those wishing to attend are asked to notify the Hon. Treasurer by Tuesday, 9 January 1996.**

Tuesday, 20 February 1996. James A. Jobling will speak on his researches for his *Dictionary of Scientific Bird Names*.

**For late acceptances and cancellations, which can usually be taken up to the Thursday preceding a meeting, telephone the Hon. Treasurer (0162) 8824214.*

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London at 6.15 p.m. for 7 p.m. A map showing Imperial College will be sent to members on request.

Overseas Members visiting Britain are particularly welcome at meetings. Details can be obtained from the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB. Telephone (01572) 722788.

ONE DAY MEETING
JOINT MEETING WITH THE LINNEAN SOCIETY OF LONDON

Saturday 23 March 1996

The Club and the Linnean Society of London have arranged a whole-day meeting to be held at the Society at Burlington House, Piccadilly, London

"Avian Taxonomy from Linnaeus to DNA"

For details of this meeting please see the enclosed leaflet or apply to the Hon. Secretary (address above).

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 115 No. 3 Published 29 September 1995

The eight hundred and forty-ninth meeting of the Club was held in the Senior Common Room of the Sherfield Building at Imperial College on Tuesday 25 April 1995, at 6.15 p.m. 38 Members and 20 Guests attended.

Members attending were: D. GRIFFIN (*Chairman*), D. A. TURNER (*Speaker*), M. A. ADCOCK, Miss H. BAKER, B. H. BECK, P. J. BELMAN, Mrs D. M. BRADLEY, P. J. BULL, D. R. CALDER, Dr M . CARSWELL, Cdr M. B. CASEMENT RN, Dr R. A. CHEKE, S. J. FARNSWORTH, D. J. FISHER, A. GIBBS, The Revd T. W. GLADWIN, G. GREEN, Dr L. G. GRIMES, C. A. R. HELM, Ms R-M. JONES, R. H. KETTLE, Dr P. LACK, N. S. MALCOLM, Dr C. F. MANN, Dr J. F. MONK, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, R. E. F. PEAL, N. REDMAN, Dr C. RYALL, P. J. SELLAR, S. A. H. STATHAM, N. H. F. STONE, Dr J. F. WALSH, Professor W. E. WATERS, Sir WILLIAM WILKINSON, M. W. WOODCOCK.

Guests attending were: Mrs S. BAKER, Mrs J. BULL, Mrs J. CALDER, P. ERRINGTON, S. ERRINGTON, Mrs F. FARNSWORTH, Mrs B. GIBBS, R. GILBY, Mrs J. GLADWIN, Mrs S. GRIFFIN, Mrs J. GRIMES, B. MARSH, Dr A. MELLAND, P. J. MOORE, R. RANFT, Dr B. ROGERS, S. ROOKE, Mrs S. STONE, R. WEBB, Mrs B. WOODCOCK.

After supper Mr Turner spoke on "Ornithology in East Africa looking back over the last thirty years and into the 21st century". He has sent the following summary of his talk.

East Africa is the richest and most diverse avifaunal region in Africa, comprising almost 1500 species (75% of the Afrotropical avifauna), and as a result over the years has attracted numerous professional and private expeditions.

Ornithology in the region has always been closely associated with the East Africa Natural History Society, which, founded in 1909, remains Africa's oldest scientific society. Over the years many individuals have contributed much to both the Society as well as the region's ornithology: Sir F. Jackson, V. G. L. van Someren, R. E. Moreau, A. Loveridge, C. F. Belcher, C. Pitman, C. W. Mackworth-Praed, M. North, H . Elliott and many others. Today the National Museum in Nairobi houses both the Society and the Dept. of Ornithology, while the relationship between the Museum and Society remains strong and close, with both still sharing a library and a journal.

Ornithological activities in the region include: the production of a regional journal *SCOPUS* (now in its 19th year); the East African ringing scheme; the East African nest record scheme; the Uganda Forest Biodiversity Programme; the ongoing surveys of the Eastern Arc Montane Forests in Tanzania; the Tanzania and Uganda atlas schemes, together with the periodic updating of the Kenya Atlas.

Recently BirdLife International chose the East African Natural History Society as its regional partner with BirdLife (Kenya) acting as the society's conservation sub-committee handling all matters relating to the conservation of birds and their habitats, as well as raising funds for various research activities.

Major ornithological findings in the last 30 years are undoubtedly the discovery of four species new to science (Sokoke Scops Owl, Rufous-winged Sunbird, Kilombero Weaver and the Udzungwa Forest Partridge).

East Africa today still harbours the greatest wildlife spectacle left on this earth, both in terms of birds and mammals, and for that reason alone it deserves the highest conservation consideration. The challenges ahead are many, and the conservation of threatened habitats (notably forests, wetlands and grasslands) will take priority in the years ahead, as sadly few are in protected areas. Tourism continues to play a major role in helping many conservation activities, while numerous international bodies offer both financial and educational assistance to all East African countries.

As we look towards the 21st century, ornithology in East Africa will very much be linked to conservation and the identification of important bird areas (IBA) throughout the region. Africa has not (in recent times) lost a bird species, and while several in East Africa are either endangered or face growing threats, every effort must be made to safeguard their habitats so that future African generations may enjoy and appreciate their rich national heritage.

The eight hundred and fiftieth meeting of the Club was held in the Ante-room of the Sherfield Building at Imperial College on Tuesday 23 May 1995, at 6.15 p.m. 30 Members and 8 Guests attended.

Members attending were: D. GRIFFIN (*Chairman*), Dr D. H. THOMAS (*Speaker*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, Mrs D. BRADLEY, Dr K. B. BRIGGS, D. R. CALDER, Cdr M. B. CASEMENT RN, Professor R. J. CHANDLER, Dr R. A. CHEKE, The Revd T. W. GLADWIN, C. A. R. HELM, M. JENNINGS, Ms R-M. JONES, R. KETTLE, Dr C. F. MANN, D. J. MONTIER, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, J. G. PARKER, C. PATRICK, Dr R. PRYS-JONES, R. E. F. PEAL, Dr C. RYALL, Dr R. E. SELF, P. J. SELLAR, Dr D. W. SNOW, N. H. F. STONE.

Guests attending were: Mrs J. B. CALDER, Mrs J. M. GLADWIN, Ms K. HOFF, Mrs M. MONTIER, P. J. MOORE, Ms C. QUIRREH, Br M. SPITTLE, C. STOREY.

Dr David Thomas spoke after supper. His subject was "Cool Birds in Hot Deserts". The following is a summary of his talk.

Sandgrouse (Pteroclididae) are a monophyletic family of dove-sized birds distributed principally within the arid and semi-arid zones of subtropical Africa, the Middle East and central Asia. Being ground-feeding seedeaters, they have a low dietary intake of preformed water and their water needs are exacerbated by potential exposure to large heat loads and wide daily and seasonal temperature extremes. Energy-shortage consequent on low primary production is a further challenge in such habitats. The two *Syrrhaptes* species inhabit the cold-winter central Asian deserts for which their adaptations are apparently largely unstudied. Of the 14 *Pterocles* species, no more than 5 occur in any region, within which some species are evidently better adapted than others for more arid conditions. Comparison among such species groups provides an ideal basis for studying the ecophysiological traits which enable animals to live in such harsh conditions: the five Moroccan *Pterocles* species ranked by increasing occupation of desert habitats showed parallel rankings in the degree of several functions which could be interpreted as facilitating survival under desert conditions. Overall success of *Pterocles* species under extreme conditions appears to be due to summation of a multiplicity of adaptations. For example: behavioural mechanisms exploit subtleties of microclimate to facilitate loss of excess heat loads (e.g. use of shade-edge to exploit blue sky as a radiant heat sink) or to minimise heat losses (e.g. shading from clear night skies). Daily activity patterns vary with prevailing conditions, in general minimising metabolic heat production when heat is hard to lose and/or water is scarce. Feather erection and huddling with conspecifics are used to increase insulation against adverse heat gains (when ambient temperatures exceed body temperatures) as well as losses (when this temperature difference is reversed). Relative tolerance of fluctuating body temperatures saves either energy for thermogenesis in the cold or water for evaporative heat dispersal under hot conditions. As with many other arid-zone birds and mammals, *P. alchata* and *P. bicinctus* have low rates of metabolism and low thermal conductances relative to body size (both facilitating energy conservation) but, paradoxically, *P. orientalis* shows neither of these adaptations and evidently attains its success (large populations and wide geographic range) by other compensatory mechanisms.

The eight hundred and fifty-first meeting of the Club was held in the same place on Tuesday 20 June 1995, at 6.15 p.m. 25 Members and 11 Guests attended.

D. GRIFFIN (*Chairman*), Dr C. G. VIOLANI (*Speaker*), M. A. ADCOCK, Dr J. ASH, Miss H. BAKER, P. J. BELMAN, I. BISHOP, Mrs D. BRADLEY, Professor R. C. CHANDLER, Dr R. A. CHEKE, S. J. FARNSWORTH, Dr C. FISHER, D. J. FISHER, C. A. R. HELM, Ms R-M. JONES, N. MALCOLM, Dr C. F. MANN, J. MISKELL, Mrs A. M. MOORE, R. G. MORGAN, Dr R. PRYS-JONES, N. REDMAN, Dr R. C. SELF, M. P. WALTERS, Mrs F. E. WARR.

Guests attending were: T. APPLETON, Mrs J. ASH, Mrs G. BONHAM, Dr N. COLLAR, M. DAVIES, Mrs F. M. FARNSWORTH, E. FULLER, Ms K. HOFF, P. J. MOORE, M. RIDDELL, A. J. WARR.

After supper Dr Carlo Violani spoke on the life and ornithological world of Tommaso Salvadori, who was a founder member of this Club. During his talk Dr Violani showed the skin of the ♂ syntype of *Cochoa beccarii* Salvadori (of which only 4 specimens are known in world collections) and also, for comparison, skins of *C. purpurea, C. viridis, C. azurea* and *Chlamydochaera jefferyi*. Dr Nigel Collar reported an extremely rare sighting in 1994 of a single ♂ and ♀ *Cochoa beccarii* in Western Sumatra.

Dr Violani has sent the following summary of his talk.

Tommaso Adlard Salvadori was born in Porto San Giorgio (Marche, C. Italy) on 30 September 1835 from Count Luigi, of Albanian descent, and from an English lady of Lincoln, Ethelin Welby. At 10 years of age he began building up a personal collection of stuffed Italian birds, prepared by himself, which he continued to gather until the 1910s; this is the first nucleus of the Salvadori Collection, mentioned in his classic paper "Fauna of Italy—Birds" (1872) and now preserved in the Natural History Museum of Fermo. He obtained his degree in Medicine and Surgery at the University of Pisa, where the famous naturalist Paolo Savi was one of his teachers, but he was soon attracted by the study of ornithology and decided to become a specialist in this field. In June 1860 he followed Garibaldi's army in Sicily during the wars for the independence of Italy, and three years later visited Sardinia with Orazio Antinori in order to collect bird specimens and make field observations on the then scarcely known Sardinian avifauna. His paper "Birds of Sardinia" was favourably reviewed by the editor of *The Ibis*: "We hail the appearance of Count Salvadori's "Catalogue of the Birds of Sardinia" as a real and most valuable acquisition to our knowledge of European Ornithology. The writer is evidently not only well posted-up in his subject generally, but appears to be a most accurate field naturalist, and—we should imagine—also a good sportsman. In conclusion, we can only say that we hope each country in Europe may at no distant time possess an ornithologist so conscientious as the one whose work we are noticing." In 1864 Salvadori moved to Turin, hoping to enter the University as a teacher, but he obtained only the honorary position of Assistant at the Zoological Museum under Professor Filippo de Filippi. At the same time Salvadori decided to marry his first cousin Bertha King, against the will of his parents; in spite of the birth of 3 children the marriage later broke up. In Turin, working at the University Museum, he started increasing the ornithological collections with exchanges and acquisitions; after 50 years of continuous activity the Museum became one of the most important institutions of its kind in Italy. Unfortunately, for health reasons (he frequently suffered from neuritis), he had to give up taking part in the first Italian expedition round the world on board the Corvette *Magenta*. The scientific leader of the voyage, Prof. de Filippi, then appointed the younger Enrico Giglioli as assistant naturalist in charge of the zoological collections. During the navigation of the *Magenta* de Filippi died in Hong Kong of "yellow fever" (probably hepatitis) and his place was taken by Giglioli who continued to look after the scientific collections and observations. The *Magenta* returned to Naples in 1868; the huge quantity of scientific material gathered was sent to Turin Museum, where Giglioli was temporarily engaged to sort it out and to entrust the different specimens to specialists for study. Giglioli and Salvadori eventually started a joint study of the birds collected by the *Magenta* Expedition, but only a few papers were published; among them, the descriptions of 5 new species of Procellariidae (including the famous Taiko of Chatham Island, *Pterodroma magentae*, rediscovered alive only a few years ago). In 1877 Salvadori undertook a prolonged series of visits to several foreign museums (Paris, London, Leiden, Berlin, Dresden, Vienna) in order to collect material for a major work on the ornithology of New Guinea and the Moluccas: it was the beginning of his masterly work in three fat volumes, the *Ornitologia della Papuasia e delle Molucche*, plus 3 supplements: "a monument of learning", according to W. Sclater. The large Papuan collections made by O. Beccari, L. M. D'Albertis, A. A. Brujin and L. Loria were the basis for this impressive scientific achievement. Other major papers by Salvadori deal with studies of birds collected in Borneo by G. Doria and O. Beccari; in Java, Sumatra and Celebes by Beccari; Ethiopia and Somalia by E. Ruspoli; Shoa by O. Antinori and Ragazzi; the Juba region by Bottego; Ruwenzori by the Duke of Abruzzi; Congo by Ribotti; Sumatra and the islands of Nias, Engano and Mentawei by E. Modigliani; Cape Verde, Portuguese Guinea, the islands of Principe and Annobon, and Burma by L. Fea; and different regions of S. America by E. Festa, Borelli and Bove; and many others. Altogether, Salvadori published about 350 papers in Italian and English (his second mother tongue) and described some hundreds of new taxa (220 for the Papuan subregion alone). In 1890—and subsequent years—the Trustees of the British Museum asked Salvadori to compile 3 of the Bird Catalogues, those dealing with the Parrots, the Doves and Ducks, Tinamous and Ratites, probably on the suggestion and advice of his good friend R. B. Sharpe. We know that the remuneration offered by the Museum was "£4 every 100 specimens catalogued". This task took some time to be completed, but finally the volumes written by the Italian author were among the most accurate ones of the series.

Proposed additions to the genus *Lonchura* (Estrildinae)

by Robin Restall

Received 19 July 1994; revised 20 April 1995

For about nine years, I have been collecting material on the genus *Lonchura* with the aim of producing a simple book of reference for the genus. My primary aim was to produce an accurate, full-colour reference illustration of every adult of every species and subspecies, every adult female where distinct from the male, and every juvenile where distinct from other juveniles. In pursuit of this objective, I have visited most of the countries in the Asia Pacific region where I have made observations of munias in the field, made contacts with various ornithologists, visited museums, met many traders in birds—mostly in Indonesia and Singapore—and visited many bird markets.

During my work with live birds, I have come across several forms that appear to be subspecies, mostly hitherto undescribed. A few have been described previously, but subsequently regarded as synonymous with other races. It is the object of this paper to list each of these cases, and in doing so propose several subspecific additions to the genus. I have followed the guidelines for descriptions proposed by LeCroy & Vuilleumier (1992). Numbered colours refer to Smithe (1981)

SCALY-BREASTED MUNIA *Lonchura punctulata* (Linnaeus)

Linnaeus (1758, p. 173) originally described the Scaly-breasted Munia as coming from Asia. The natural range of the species is from northern Pakistan to Taiwan, and across all of southeast Asia to Sulawesi and Tanimbar. Twelve subspecies are recognised in Peters' *Check-list* (Paynter & Storer 1970). Looking at the map and shading in the countries where the species occurs throws up the apparent anomaly that this ubiquitous and highly adaptable species has not been described on the island of Borneo. Neither Smythies (1981) nor Goodwin (1982) recognise the species as occurring in Borneo. Goodwin (pers. comm.) had overlooked the mention of the species in Harvey & Holmes (1976). A further sighting was recorded by Holmes & Burton (1987), and it is mentioned by MacKinnon & Phillipps (1993) as "a presumably feral population".

A good friend in Jakarta received some munias in 1992, from west Kalimantan. These birds had been caught by her brother who lives in Pontianak, and sent to Jakarta specifically for my study. Over half of the birds were Scaly-breasted Munias. Some months later I visited a known dealer in wild birds, in Jakarta, to inspect a small shipment of munias he had received from Bandjarmarsin, south Kalimantan. There were some 40 Scaly-breasted Munias, which were identical to the birds received from Pontianak. These birds are clearly distinct from any of the geographically nearby races and are described below.

Lonchura punctulata holmesi subsp. nov.

Syntypes. Specimens no. 831281, 831282 and 831283, AMNH. Collected by C. Choa, from Semitau, west Kalimantan (0°30′N, 111°59′E).

Description. The adult male is 105–115 mm long. The wing is 49–52 mm, the culmen 11 mm, and the tarsus 11–12 mm. It is dark cinnamon-brown above with the edges of the wing-coverts broadly bordered with light cinnamon-brown (Smithe 33). From nape to lower back and the wings, but not the paler edgings, it is finely barred with darker wavy lines similar to that on the African Silverbill *L. cantans*. The lower back is olive-brown, graduating to brownish olive-grey on the uppertail-coverts and tail. These latter are barred and edged with very pale straw. The visual effect of the rump to tail is of a much greyer coloration than on any other race. The face is dark reddish-amber, becoming hazel on the outer ear-coverts and sides of the neck where there are a few pinky-white dots. The breast and sides of the breast and flanks are white with the characteristic scale-markings in dark amber. The thighs are amber, spotted and barred with off-white. The underwing-coverts are pale cinnamon with some darker centres to the feathers, and there is some dark edging. The centre of the belly is pale cream. This graduates to very pale straw on the undertail-coverts. There is a variable amount, but always very little, brownish ticking on the undertail-coverts. The bill is bluish-grey, tending to black on the upper mandible. The irides are dark ruby. The legs and feet are dark grey.

The adult female is 103–108 mm long; wing 48–50 mm, culmen 10–11 mm, tarsus 10–11 mm. In coloration the sexes appear to be alike. Males have longer tails, invariably *c.* 5 mm longer. There were no juveniles in either of the two batches of birds. I was able to record the moult of both male and female from what was presumably first-year adult plumage into definitive adult plumage. The only substantial change was a darkening of the upper mandible, while the lower became a more clear pale blue-grey.

Compared to *L. punctulata baweana*, from the island of Bawean, the nearest subspecies geographically, the new subspecies is darker above, more clearly defined on the breast and flanks, and significantly much paler on the uppertail-coverts and edgings to the tail. Compared to *L. punctulata nisoria* from Java, it is overall lighter, particularly on the uppertail-coverts and tail edgings. Compared to both, the new bird has more distinctively-marked upper parts, with fine barring, and the pale quill striations more noticeable.

Etymology. I have proposed the name *Lonchura punctulata holmesi* in recognition of the help and support of Derek Holmes of Jakarta, who first recorded the Scaly-breasted Munia in Kalimantan.

WHITE-RUMPED MUNIA *Lonchura striata* (Linnaeus)

The White-rumped Munia is also an extremely widespread species, ranging from western India across Asia to eastern China. Its southerly limit is Sumatra. Goodwin (1982) follows Paynter & Storer in recognising six distinct subspecies, but makes the gesture of dividing them into two groups: the dark-brown-and-white Indian forms *striata*, *semistriata* and *fumigata*; and the more diffuse-brown-and-white eastern forms *acuticauda, subsquamicollis* and *swinhoei*.

According to Paynter & Storer, *L. striata subsquamicollis* ranges from southeastern Burma and southern peninsular Thailand through Indochina and the Malay peninsula to Sumatra. It is a race that varies from the northern part of its range to the south. Northern birds have the patch on the sides of the neck plain orange-brown. In south Malaysian birds this patch has white spots on the lower half. The rump of the northern bird is clear, unmarked cream while that of the southern bird is streaked with brown. The undertail-coverts of northern birds are plain cinnamon, while on southern birds they are cinnamon ticked with dark brown. These observations were recorded by myself in colour drawings made from live birds taken in the northernmost part of the Malaysian peninsula and peninsular Thailand, and birds taken south of Kuala Lumpur.

In the collection at Tring is a single specimen in very poor condition, tail-less, labelled *L. striata explita* from Sumatra. Paynter & Storer say that *L. striata explita* Delacour, 1947 is obviously a lapsus and *nomen nudum*, and considered it synonymous with *L. striata subsquamicollis*. At the time, I disregarded the specimen, despite its looking somewhat different from *subsquamicollis*, being 'dirtier' on the breast. A year later I was visiting the zoology department of the University of Singapore, formerly the Raffles Museum, where I found six good specimens from Sumatra labelled *L. s. striata*. These represent a quite distinct extension to the cline within *L. striata subsquamicollis*, being sufficiently distinct to justify recognition. Chasen & Hoogerwerf (1941) first recognised the form as *L. striata sumatrensis* (a name that has been ignored in most subsequent literature), and I propose reinstating it as such. The birds in Singapore have been relabelled and incorrectly named *L. s. striata*. For clarity of reference I propose taking one of these as the type specimen.

Lonchura striata sumatrensis Chasen & Hoogerwerf

Type. Specimen no. ZRC.3.3500 Nat. Univ. Singapore, male, collected by Robinson and Chasen at Tanjong Kassan, Sumatra, 12 February 1939.

Description. This form differs from *L. striata subsquamicollis*, the nearest race geographically, by being richer brown above, with a noticeable grey to the belly and flanks that is more heavily streaked. The ear-coverts are paler, and the breast is a brighter brown.

Range. The island of Sumatra. Reports of its distribution vary, giving the impression that it is found all over the island, but it is sporadic and only locally common.

FIVE-COLOURED MUNIA *Lonchura quinticolor* (Vieillot)

This species occurs throughout the Lesser Sundas in Indonesia, from Lombok in the west to Tepa in the east. Goodwin recognises only the nominate form, but admits (pers. comm.) to having overlooked the race *wallacii*. White & Bruce (1986) treat *wallacii* as a synonym of *quinticolor*. As Goodwin and White & Bruce both point out, the species is variable, but I believe there is a pattern in the distribution of the variations. I have not only studied specimens at Tring and the AMNH, but have examined live birds from many locations in the lesser Sundas, made field observations, and kept many birds in captivity for detailed study.

There is an uneven distribution of body size from east to west. Eastern birds are up to 125 mm long, while western populations do not exceed 115 mm in length. In between, some populations average 105 mm in length, others, exceptionally, 120 mm. I realise that length is not usually recorded, being so unreliable in museum specimens. The measurements I quote are of live birds and have value for comparative purposes.

L. q. quinticolor has the lores, forehead and forecrown chestnut, the rear crown to nape chestnut with blue-grey sub-terminal lines on either side of the quill forming rows of V-markings (with the tip of the V missing). This patterning extends irregularly onto the mantle, which is cinnamon-brown. The superciliary and ear-coverts are cinnamon with whitish-pinkish striations caused by pale feather quills. The chin and throat are reddish-maroon. The wing-coverts and lower back are cinnamon like the back, the wings and tail being a darker brown. The rump, uppertail-coverts and edges to the tail are orange-yellow to straw-yellow. This lightens with age, and is more bright yellow in birds 2–4 years old than in first-year adults. The breast, belly, ventral area and flanks are pure white with a silky texture to the tips of the feathers that gives a shiny, scaly appearance in some lights. The underwing-coverts are creamy-white. The thighs and undertail-coverts are black. The irides are reddish-brown. The bill is blue-grey, tending to lilac at the base. The legs and feet are grey. The distribution of this race is from Alor, through Wetar, Kisar, Sermatta and Babar to Tepa.

In contrast, *L. quinticolor wallacii* has the entire head burnt umber, paler to cinnamon on the ear-coverts, and blackish on the chin and throat. The quill striations on the superciliary and ear-coverts are white, not pink. The mantle and wing-coverts are maroon-chestnut, the wings chestnut, and the tail dark brown. There are faint broken-V-markings on the nape of freshly-moulted birds, but these tend to abrade, leaving solid colour. The rump and uppertail-coverts are maroon or reddish-maroon on the edges of the tail. In other respects it follows the nominate race, but I have never seen the silk effect on the breast of *L. quinticolor wallacii*. The distribution of this race is Lombok and Sumbawa only.

In between these two extremes is a near perfect bridge. That there is some gradation is certain, and I have difficulty in defining the range limitations of each, but there is a distinct third race that I describe below.

Lonchura quinticolor sumbae subsp. nov.

Type. Specimen no. 1898.12.5.60, Brit. Mus. (Nat. Hist.), Tring. Collected by A. H. Everett at Waingapo, Sumba, in 1898.

Figure 1. Distribution of the Five-coloured Munia *Lonchura quinticolor*.

Description. The adult is about 120 mm long. The entire head is maroon with pink quill striations on the superciliary and ear-coverts. There are broken-V-markings on the nape, which often extend from crown to upper mantle. The rump, uppertail-coverts and edging to the tail feathers are all chrome-orange. In other respects it resembles *L. q. quinticolor*, but in a large percentage of the birds of this race that I have seen, the underparts have been washed with cinnamon. These are almost certainly first-year adults because those I have kept for prolonged periods have moulted paler on the breast, and in some cases to white.

My map (Fig. 1) attempts to delineate the three races. The yellow-rumped *quinticolor* is restricted to the eastern end of the range, from East Timor to Sermatta and Tepa. At the western end, the maroon-rumped *wallacii* occurs on Lombok and Sumbawa. The orange-rumped *sumbae* occurs on west and central Flores, Sumba, Sawu, Roti and west Timor. I have no record of descriptions of birds from eastern Flores, Adonara, Lomblen and Bantar.

Etymology. The proposed name is taken from the name of the island where the type specimen was collected.

ALPINE MUNIA *Lonchura monticola* (De Vis)

This is a high altitude grassland species of southwestern Papua New Guinea, normally found between 2800 and 3900 m in the Wharton and Owen Stanley Ranges. There is much anecdotal evidence to suggest the species falls into two distinct types, e.g. Coates (1990), Hicks (1987; pers. comm.) A close examination of the skins in the AMNH shows this division to be subtle, but a real and geographically distinct one, one form occurring in the Wharton Range and the other in the Owen Stanley Range.

The nominate adult from the southwest slopes of Mt. Edward Albert, in the Wharton Range, has the entire front of the head, to the rear crown, ear-coverts and bib dusky-brown to blackish. The nape is clay-coloured, forming a complete collar that covers the upper breast, and which may be scalloped or streaked with cinnamon. The mantle is dark earth-brown with the basal part of the feathers darker, giving the effect that the back is lightly scalloped with cinnamon. The wings are tawny with darker centres to the feathers. The rump, uppertail-coverts and edges of the blackish tail are straw-coloured. The upper breast is white with slight brown suffusions. A bar of white-scalloped black runs across the lower breast and continues down the flanks. The thighs and undertail-coverts are black. The belly is pale yellowish-buffy. The male and female are alike.

Lonchura monticola myolae subsp. nov.

Syntypes. AMNH specimens no. 421471 from Mt. Scratchley and no. 421469 from Mt. Knotsford in the Owen Stanley Range, Papua New Guinea.

Description. The adult is similar to *L. m. monticola* but differs in having the back clear chestnut, without any mottling or scaling. The belly is the same clear and even white as the upper breast patch. The yellow of the uppertail-coverts is slightly richer than in *L. m. monticola* (noticeably, according to Coates 1990, based on the appearance of live birds in the hand). There is no difference between the sexes.

Etymology. The proposed name *L. monticola myolae* is derived from a place called Myola, in the Owen Stanley Range. A description of the birds there by Roger Hicks (pers. comm.) first drew my attention to the possibility of a different form from the nominate.

THICK-BILLED MUNIA *Lonchura melaena* (Sclater)

This species has only been described from the island of New Britain, PNG. The adult is about 120 mm long. The wing is 54 mm and the culmen 13 mm. The bill is larger and deeper than that of most munias, being some 12 mm deep, and this causes the head to be proportionally larger. The entire head, bib to breast, flanks, thighs, ventral area and undertail-coverts are all black. From the crown to the lower back it is dark olive-brown, while the wings are dark brown. The rump, uppertail-coverts and edges of the tail are chrome-orange. The belly and underwing-coverts are pale cinnamon-rufous to salmon. The black of the flanks forms a series of irregular bars. The irides are brown. The bill is black with pale blue at the base of the lower mandible. The legs and feet are dark grey to blackish. The sexes appear to be similar.

A small hitherto undescribed population has been observed on the island of Buka, north of Bougainville, by Don Hadden (1981), with whom I exchanged correspondence on the subject. Two specimens in excellent condition are in the collection of the museum in Port Moresby, and one mummified and slightly faded specimen is in the AMNH, but this is not catalogued. This form is quite distinct, and I propose recognising it as a new subspecies, as follows.

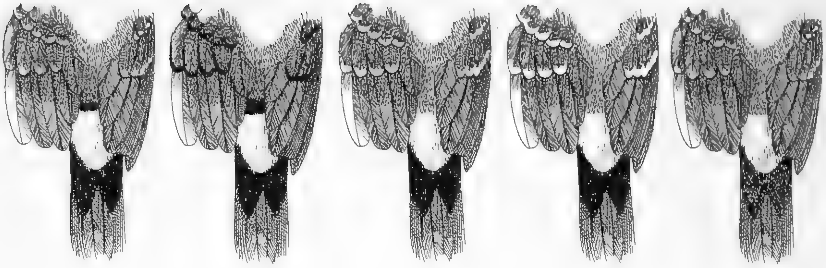

Figure 2. Comparison between the wing-coverts, rump and uppertail-coverts of the four subspecies of the Streak-headed Mannikin *Lonchura tristissima*. Left to right: *L. t. tristissima, L. t. hypomelaena, L. t. calaminoros, L. t. calaminoros* from Karkar Island, *L. t. bigilalae*.

Lonchura melaena bukaensis subsp. nov.

Syntypes. Specimens no. 24361 and 24359 in the collection of the National Museum and Art Gallery, Port Moresby. These birds were taken at Buka airfield (5°15′S, 154°35′E); date and collector not recorded.

Description. Adult about 120 mm long. The wing is 54 mm, the culmen 12–13 mm. This race differs from *L. m. melaena* in being much darker above. The black extends over the entire head and washes over the dark olive-brown back. The wings are dark brown. The rump, uppertail-coverts and edges of the tail are dark scarlet to chestnut (described by Hadden as cinnamon-rufous, but in the specimens I examined they were definitely darker and redder than this). The black on the breast is much more extensive than in *L. m. melaena*. The belly is buffy-salmon.

Etymology. The proposed name derives from the location of origin of the syntypes.

STREAK-HEADED MANNIKIN *Lonchura tristissima* (Wallace)

Coates (1990) refers to "a stable hybrid population" of *L. tristissima* × *L. leucosticta* along the coastal area of the central province of PNG. I looked into this during a visit to the area, and was able to make a close examination of the *Lonchura* specimens in the NMAG, all of which were in excellent condition. I concluded that the supposed hybrids are a perfectly valid and distinct, hitherto undescribed subspecies of *L. tristissima*. In further studying the species at Tring and the AMNH later, I concluded also that the four races of *L. tristissima* recognised by Paynter & Storer can be clearly separated and the confusion about them reduced significantly. The following descriptions are, to the best of my judgement, based on adult males in second-year plumage. I have stressed the key discriminators. Measurements are given only for the nominate form; the other subspecies do not differ noticeably in size. Figure 2 shows the critical parts of the plumage of the different forms, and Figure 3 their distribution.

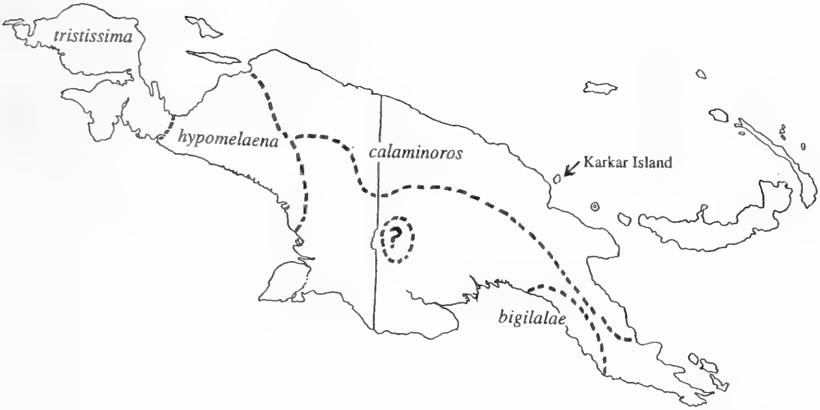

Figure 3. Distribution of the Streak-headed Mannikin *Lonchura tristissima*.

Lonchura tristissima tristissima (Wallace)

The adult is 105–110 mm long, the wing 52–55 mm, and the culmen 10–11 mm. It is burnt umber above, from forehead to lower back, wings and tail. There are whitish lines on the feather shafts on forehead, crown, superciliaries, lores and ear-coverts. There are faint streaks on the mantle and scapulars. There are whitish terminal spots on the median and greater wing-coverts, and pairs of sub-terminal spots on the tertiaries. In most of the birds that I examined in the AMNH, the edges of the median and greater wing-coverts were broadly marked with Mars brown (Smithe 223A). The rump is mainly brown, with a **narrow bar of black** immediately adjoining the uppertail-coverts. The short uppertail-coverts are straw yellow, the long uppertail-coverts are black. The tail is fuscous. From chin to belly and flanks it is sepia, which becomes black on the thighs, ventral region and undertail-coverts. The underwing-coverts are creamy salmon. The bill is steel blue or violaceous grey. The irides are dark brown. The legs and feet are grey.

Lonchura tristissima hypomelaena (Sresemann & Paludan)

The adult has the face blackish, the rest of the head and upperparts are hair brown. The lower rump forms a **broad black bar**. The short uppertail-coverts are **bright** straw yellow. Below, it is much darker than *L. t. tristissima*, tending to dark greyish-brown becoming black. Males are blacker below than females. Pallid streaks on the sides of the upper breast are more noticeable in the female, and may form a slight barring pattern (Rand & Gilliard 1967). The edges of the median and greater wing-coverts are black, forming **two dark bars**. There may be pairs of pale sub-terminal spots on the tertiaries, which also have dark edges.

Lonchura tristissima calaminoros (Reichenow)

This race differs by having the head and back Prout's brown (Smithe 121A), the wings tending to fuscous. While there are typical whitish streaks from the forehead to the nape and the outermost ear-coverts, there are none on the mantle or scapulars. There are buffish spots on the lesser and median wing-coverts. The edges of the greater wing-coverts are white or creamy (as distinct from the Mars brown of *L. t. tristissima*, or the black edges of *L. t. hypomelaena*), forming a **pale bar** across the wing. Birds I examined from Dampier Island had extremely sharply defined, clear white wing bars, and this population merits further study. There is **no black** on the lower rump. There are no pale spots on the tertiaries. The short uppertail-coverts are **pale** straw.

Lonchura tristissima bigilalae subsp. nov.

Syntypes. Specimens no. 24984 and 24989, National Museum and Art Gallery, Port Moresby. Collector and date of collection not recorded, but the birds were taken in the general area around Port Moresby.

Description. The adult has the entire body Mars brown, darker on the primaries and tail, ventral region and undertail-coverts. The white streaks run from the forecrown over the head to become faint and buffish on the nape, mantle, scapulars and lesser wing-coverts. The white streaks are noticeably brighter on the hind ear-coverts, sides of neck and sides of the upper breast. The buffish spots on the median wing-coverts become brighter on the greater wing-coverts, forming a distinct bar. There are buffish edges to the tertiaries. The overall appearance is of a more profusely spotted bird than any other race. The centres of the feathers of the sides of the breast and upper flanks are amber. The rump is slightly darker than the mantle and has **no black bar** at all. The short uppertail-coverts are trogon yellow, the long uppertail-coverts being fuscous, and not black as in the other races. As in the other races the females are not easy to distinguish, but tend to be not so brightly spotted and have the yellow of the short uppertail-coverts a little duller.

Etymology. I name this race after Iliah Bigilale, the curator of birds at the NMAG in Port Moresby, who was extremely helpful to me in my work with *Lonchura* during my visit to PNG, and who lent me the entire collection of *Lonchura* specimens for detailed study and making coloured paintings in air conditioned comfort.

Lonchura tristissima undescribed population

There is a population of *L. tristissima* reported (Roger Hicks *in litt.*) from the Kiunga area in the central Western Province of PNG, not far from the border with Irian Jaya, near the Lake Murray region. No details of plumage are known.

WHITE-SPOTTED MANNIKIN *Lonchura leucosticta* (d'Albertis and Salvadori)

This closely-related species is similar to the Streak-headed Mannkin but is easy to separate with its more boldly marked and pronounced white streaks and terminal spots on the head and wings. The adult male is about 105 mm long, with the wing 45–50 mm, culmen 11–12 mm and tarsus 16–17 mm. It has a very pale cinnamon to white chin, is tawny on the breast, belly and flanks, with white terminal spots, often in an arrowhead shape, that cover the chin, throat, upper breast, sides of breast and upper flanks. The underwing-coverts are salmon to pale buff. The thighs, ventral area and undertail-coverts are black. The female's measurements are similar but the culmen is 10–11 mm. She is more readily distinguished than the female *L. tristissima* by being pale cinnamon on the chin, having brown thighs, and dark brown vent and undertail-coverts. The breast is a less rich tawny. Some females lack white terminal spots on the tertiaries. Juveniles are similar to the adult *L. tristissima* but are distinguished by having a pale chin, which *L. tristissima* never has. The juvenile lacks the straw and black uppertail-coverts.

There is a single specimen in the collection of the NMAG in Port Moresby that was taken locally. The geographic origin separates it by some 500 km from the rest of the range of the species (Fly River to Noord River), and the bird is marginally but significantly different in plumage. It is labelled 'male' by the person who prepared the skin, perfectly competently. It is in excellent condition, and is not a hybrid. Although based on a single specimen, I consider the description of a new subspecies is warranted.

Lonchura leucosticta moresbyae subsp. nov.

Type. Specimen no. 24744, NMAG, Port Moresby. The bird was taken locally, presumably within the environs of the city; the collector is not recorded.

Description. The bird is an adult male; wing length 47 mm, culmen 9 mm, tarsus 14 mm. Above it is similar to *L. l. leucosticta*. Below, the chin is creamy-white, radiating in whitish spots onto the throat, sides of breast and upper flanks. The spots have dark brown sub-terminal marks, and there are also dark brown edges to the feathers on either side of each whitish spot so that each spot is thrown into sharp relief. The underwing coverts are salmon. The tawny of the underparts tends to cinnamon and is more like the colouring of the female *L. l. leucosticta*. The thighs, vent and undertail are dark greyish-brown.

Compared to the nominate race (Fig. 4), this bird has less extensive spotting on the breast and more extensive yellow on the rump. It has a distinctive greyish-brown vent and undertail-coverts. It appears to be marginally smaller, but with only one specimen to compare this is uncertain.

Etymology. The proposed name derives from the locality where the specimen was collected.

WHITE-HEADED MUNIA *Lonchura maja* (Linnaeus)

The White-headed Munia is locally common from southern peninsular Thailand down the Malaysian archipelago to Bali. It is a somewhat variable species, and subspecific divisions have been suggested in the past, e.g. *Munia maja zapercna* and *M. m. simuralensis*,

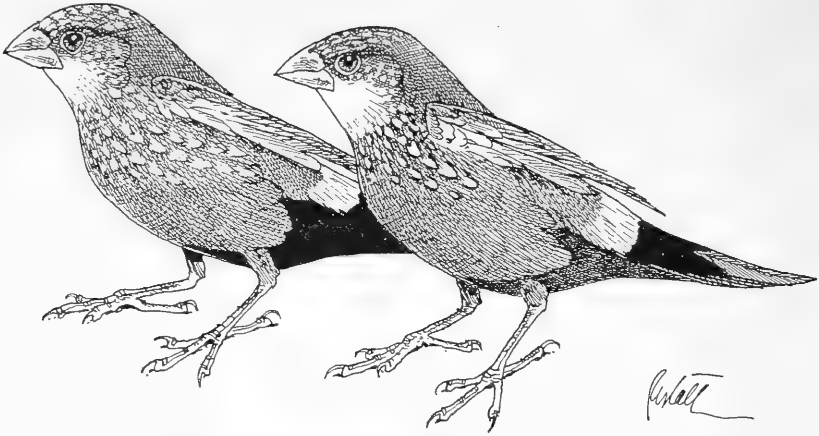

Figure 4. Comparison between *Lonchura l. leucosticta* (left) and *L. l. moresbyae* (right).

both Oberholser 1926. But the variations in colouring are not dramatic and tend to be within a given population rather than exclusive to a defined geographic region. *Lonchura maja* is regarded by Paynter & Storer as being monotypic.

It is widely known in the bird trade in Singapore and Taipei that the White-headed Munia can be obtained from Vietnam. Small numbers of the species are often included in shipments of munias from Ho Chi Minh City, especially if large numbers of Chestnut Munias *L. atricapilla* are involved. I have made several trips to Vietnam in order to verify that these *L. maja* do originate there and are not the result of admixtures of birds from Indonesia. I found the species in two locations. The Vietnamese birds are located in an area quite separated from the main range of the species (Fig. 5). They are also quite distinct, and I propose that they be recognised as a new subspecies.

The adult male of nominate *maja* is up to 120 mm long. The wing is 55–59 mm, the culmen 12–13 mm, and the tarsus 13 mm. The entire head of the first-year adult is off-white with a buffy tinge on the nape. The off-white becomes whiter with successive moults. The buffy nape is also variable with age, and is usually drab (Smithe 119D) in a first-year bird. The breast is a cinnamon-drab or sayal brown (Smithe 223C). The underwing-coverts are dark pinkish-buff. The back is burnt umber, becoming deep reddish-maroon on the lower rump, lower flanks and uppertail-coverts. The upper flanks are a slightly more vinous version of this. From the centre of the lower breast to the undertail-coverts is black. The legs and feet are dark grey, blackish on the large scales.

The adult female is similar but usually sufficiently different to be distinguished. The length is closer to 115 mm, the wing 54–57 mm, the culmen 11–12 mm, and the tarsus 12–13 mm. The buff of the nape is more extensive, reaching the crown and tingeing the bib, which is fawn

Figure 5. Distribution of the White-headed Munia *Lonchura maja.*

colour (Smithe 25). The breast patch is cinnamon-brown (Smithe 33). The breast merges into the upper flanks, which usually join in a soft bar across the lower breast, separating it from the dull black of the belly and undertail-coverts.

Lonchura maja vietnamensis subsp. nov.

Type. Adult male, female and juvenile collected by Charuvarn Vanasin and Dr Atichart Suntharos near Da Lat, 11°56′N by 108°25′E, in January 1995. Other similar birds were collected near the Cambodian border by Tay Ninh, 11°18′N, 106°05′E, in November 1994. These specimens are in my possession at the time of writing; they will be deposited in the AMNH collection in due course.

Description. The adult male is 106–110 mm long, wing 52–56 mm, culmen 12 mm, tarsus 14 mm. From the forehead to nape it is sayal brown (Smithe 223C). The chin and ear-coverts are beige, the superciliaries, lores and the forepart of beneath the eye off-white. The back and wings are Natal brown (Smithe 219A). The rump to tail is rich maroon-red with some crimson glistening on the long uppertail-coverts and central tail feathers. The breast is cinnamon-brown (Smithe 33). The flanks are chestnut (Smithe 32), almost burnt sienna, which joins the uppertail-coverts at the lower flanks. The underwing-coverts are light cinnamon. The thighs are black. From the centre of the lower breast to the undertail-coverts is jet black.. The bill is blue-grey with white cutting edges. The irides are very dark brown, the legs and feet are mid violaceous-grey.

The adult female is 104–106 mm long; the wing 52–54 mm, culmen 12 mm, tarsus 12 mm. It is whitish on the front forehead and around the eyes and sides of face, tinted with pale cinnamon brown. The rear forehead is light drab (Smithe 119C) to dark drab (Smithe 119B) on the nape. The back and wings are burnt umber. The lower rump is very dark reddish-maroon. The tail is dark brown with mahogany edging to the feathers. From throat to breast it is dark fawn, almost olive-brown. The flanks are chestnut. The underwing-coverts are warm buff with dark brown edges or tips. From the centre of the breast to the undertail-coverts it is dull black. The irides, bill, legs and feet are as for the male.

The juvenile before moulting is 104 mm long. From forehead to back it is light cinnamon-brown to rufous, lightest on the top of the head, darkest on the back and wings. The flights and greater wing-coverts are dark brown, edged with rufous. The lower rump and uppertail-coverts are raw sienna. It is buffish on the throat, around the eyes and ear-coverts, becoming pale clay on the rest of the underparts. The flanks become sayal brown under the wings. The underwing coverts are chamois. The irides, bill, legs and feet are as for the adult.

Compared to nominate *maja* the Vietnamese adult birds are overall darker, especially noticeable on the head where the white is restricted to the area around the eyes and front of face. There is no white on the bib or throat, although the bib of the older male is near white. Put another way, the male and female *L. maja vietnamensis* resemble a dark- and a very dark-headed pair of *L. m. maja*.

Etymology. I have named the Vietnam population of the White-headed Munia *L. maja vietnamensis* from the country of origin.

Lonchura malacca (Linnaeus) and *L. atricapilla* (Vieillot)

Delacour (1943) united three forms of munia usually regarded as three separate species. These were *Lonchura malacca, L. atricapilla* and *L. ferruginosa*. He called the species *Lonchura ferruginosa*, overlooking the fact that *Loxia malacca* (Linnaeus 1766) pre-dated *Loxia ferruginosa* (Sparrman 1789). Since then several writers have queried the wisdom of this. Wolters (1979) regarded *L. ferruginosa* as a good species and Goodwin (1982) and Sibley & Monroe (1990) follow him. Goodwin separated *L. malacca* into two groups, *malacca* types and *atricapilla* types, but retained the concept of a single species. I propose to regard them as distinct and separate species, though they are obviously genetically very close (Kakizawa & Watada 1985). My reasoning is based on both morphological characteristics and behaviour. *L. malacca* occupies a clearly demarcated range in southern India, separate from that of *L. atricapilla* to the east, and there are no intergrades nor hybrids recorded (Ali & Ripley 1987). The 250 km of geography that lie between the two distributions appear to do a good job of keeping them apart.

Within *L. malacca* there are five distinct morphs. By far the most common is the familiar black-headed, chestnut-backed, white breast and flanks, black-bellied bird known as the Tri-coloured Munia. The four variants are: (1) a noticeably irregular zig-zagging division between the white of the flanks and the black of the belly. In pronounced cases this almost takes on the nature of barring. (2) A fine wavy black barring over the white feathers reminiscent of the fine barring on the African Silverbill *L. cantans*. (3) Cinnamon edging to the white feathers giving

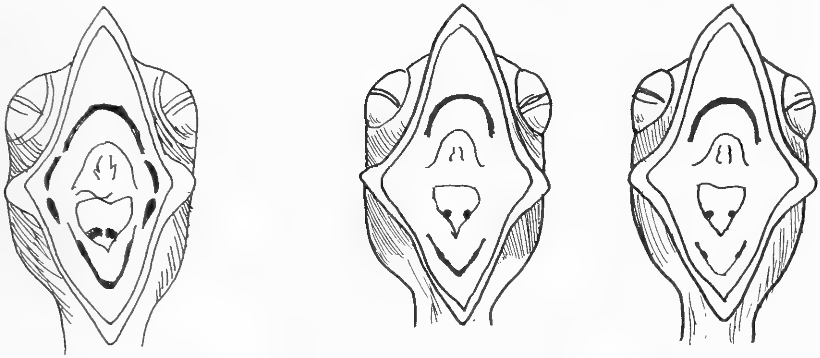

Figure 6. Palate markings of nestlings of *Lonchura malacca* (left), *L. a. atricapilla* (centre) and *L. a. jagori* (right).

a scaled appearance. There is some slight variation within this morph. In some birds the scaling may be bolder than in others. In some birds there may be a wash or light suffusion of cinnamon to the white ground colour. (4) The white is completely suffused with light cinnamon. This also is variable, with some birds having the cinnamon close to the belly colour of the Pallid Munia *L. pallida*. This morph does not look like the Chestnut Munia *L. atricapilla*, the tone of cinnamon never looking like the rich orange-brown of that species.

L. atricapilla has an extensive sprawling range, within which there are some confusing and inconsistent clines (Parkes 1958), some abrupt contrasts, and even some overlap (Andrew & Holmes 1990), where two quite distinct races retain their own integrity, thus raising some very interesting questions.

There is considerable variation within *L. atricapilla*, none of which occurs in *L. malacca*. The head ranges from black to pale grey, brown, or even creamy-grey on the nape. The chestnut of both upper and lower surfaces varies from an orange-cinnamon-rufous to deep, dark chestnut. The lower rump and uppertail-coverts range from deep maroon to yellow. The belly is jet black in some races, chestnut in others, and a full range in between in others. Taking Parkes' (1958) map showing plumage discriminators for some races, and extending it to cover the entire natural range of the species, it is clear there is no trend nor cline, but a haphazard pattern. Significantly, there is no white on any subspecies of *L. atricapilla*, nor as a variant morph within a population.

Although I have not been able to hold live nestlings side by side for comparison, it appears that the palate markings of nestling *L. malacca* are different from those of *L. atricapilla*. (Fig. 6). The similarity of nestling palate markings of *L. a. atricapilla* and *L. a. jagori*, two widely separated races, suggests a homogeneity of the species that supports my thesis.

In behavioural terms, when placed together in captivity or in the wild where one has been introduced into the other's territories, e.g. Hong

Kong, or where both have been introduced, e.g. Honshu, they self-select for partners and pair bonding. The voices are similar, but the calls of *L. malacca* have a vibrato quality lacking in *L. atricapilla.*

Both species occur in the Mai Po marshes in Hong Kong, where the Chestnut Munia is a migrant summer visitor, and the introduced Tri-coloured Munia is a resident. Mixed breeding pairs have not been recorded. Viney *et al.* (1994) refer to intermediates occurring in the Mai Po marshes, where both species breed. This conclusion was drawn from sightings of individual adults of both species flying to the same reed bank, carrying nest-material (C. Viney pers. comm.). Since it is invariably the male that carries nest-material to the nest site, where the female constructs the nest, the sightings could only have been of male birds, and the reasonable inference would be that both species were breeding in the same reed bed, not that the two species were inter-breeding.

I propose that the Tri-coloured Munia *L. malacca* and the Chestnut Munia *L. atricapilla* be accepted as two distinct species, and these notes are written on this basis.

Two Chestnut Munias were included in a collection from south Borneo by Ernst Mayr (1938). These two specimens were collected at Parit; they are referred to by Mayr as *Lonchura atricipalla minuta* (Meyen), and were deposited in the collection at the AMNH. In his paper, he writes ". . . the two birds are darker on the back than even the darkest specimen of a series of nine birds from north Borneo and the Natuna Islands". I had cause to look at these birds in the AMNH subsequently, when I realised that two birds I had painted from southern Borneo fitted his description. It turned out that the two AMNH specimens are now only marginally darker than specimens from northern Borneo, and have probably foxed. This is often the case, for when live birds or fresh specimens of certain colours are compared with older museum specimens there may be a significant difference in colour density and tone.

In July 1991, during a visit to the Jakarta bird market, I found a cage containing 35 or 40 Chestnut Munias. The dealer was known to me as a man who regularly received birds from Kalimantan. He said that these particular birds came from Sampit in Kalimantan Tengah (2°32′S, 112°54′E). This is not far from Parit (3°10′S, 113°43′E), and in any case is not necessarily precisely where the birds were trapped. All the birds were very dark, including the juveniles, certainly darker than any Chestnut Munias I had ever seen before, or since.

I believe that Mayr's birds did represent a previously undescribed form. The name that he used, *minuta*, was given by Meyen to a bird from the variable, but distinct, Philippine population. Two specimens were selected from the Sampit shipment, for which I propose the name

Lonchura atricapilla obscura subsp. nov.

Holotype. Details will appear in a later issue, as logistic problems arising from the author's travels in the Pacific region have prevented the completion of this section—Ed.

Description. The adult is *c.* 105 mm long; wing 52 mm, culmen 12 mm, tarsus 12 mm. The head is entirely black, tending to a very rich deep chocolate on the nape. The back, sides of breast, which barely join across the breast, and flanks are deep, dark chestnut-maroon, wrapping round on the sides of the body to merge into the chestnut of the lower flanks. The wings are deep chestnut, with sepia flights edged with chestnut, the tertiaries being edged with paler chestnut. The tail is sepia, edged slightly with maroon. The underwing-coverts are flesh-ochre. The centre of the lower breast, belly, thighs and undertail-coverts are black. The bill is pale bluish-grey. The irides are chestnut. The legs and feet are grey.

Compared to *L. atricapilla jagori* from northern Borneo (the form is consistent in colouration in northern Borneo, unlike the populations in the Philippines where it is quite variable), the adult is noticeably darker brown above and below, and completely lacks any orange on the uppertail-coverts or edges of the tail feathers.

The juvenile is about 100 mm long. The wing is 50 mm, culmen 11 mm, tarsus 12 mm. The forehead and crown to the lower back are cinnamon-brown, the wings darkening to Prout's brown (Smithe 121A), the median, greater wing-coverts and flights are edged with umber. The chin and throat are pale warm drab to beige. The rest of the underparts are salmon (Smithe 6), the underwing-coverts being particularly richly coloured. I have not been able to compare it directly to juvenile *L. a. jagori* but it is significantly darker and more richly coloured below than the juvenile *L. a. sinensis*.

In May 1990, my friend Linda Santosa in Jakarta received a small private shipment of 8 Chestnut Munias from Pontianak in western Kalimantan. They had been caught in marshland at Selimbau, not far from Semitau, by a relative specially for me to study. I found them to differ from *L. atricapilla jagori* from northern Borneo by having no orange on the uppertail-coverts, only a slightly variable orange edging on the tail. The rump, normally maroon, is a rich red. A second lot of birds arrived in October, and these were identical to the first lot except for the underwing-coverts which were paler, with brown edges. I have treated them as the same in the notes below. I believe this population is sufficiently distinct to justify subspecific status and I name it

Lonchura atricapilla selimbaue subsp. nov.

Type. AMNH specimen no. 831285, collected by C. Choa from Selimbau, Kalimantan Barut, 0°37′N, 112°08′E.

Description. The adult male is 105–110 mm long, wing 52 mm, culmen 11 mm, tarsus 12 mm. It has the entire head and upper breast black. The wings are chestnut, the lower rump and uppertail-coverts are brick red (Smithe 132A). The tail is a deep orange-maroon with a silky orange edging. A narrow bar across the breast and flanks is brick red, slightly darker than the chestnut back. The underwing-coverts are buffy-yellow, or pale buffy-yellow with brown edges. The axillaries are buffy yellow with chestnut centres. The belly, thighs, ventral area and undertail-coverts are black. The line where the black of the belly meets the brick red of the flanks is irregular as in *L. atricapilla jagori*. The bill is pale bluish-grey. The legs and feet are dark grey.

The female is 98–105 mm long, wing 51–53 mm, culmen 10–11 mm, tarsus 11–12 mm. The entire head is black, but may be dark greyish-brown on the nape. The bar across the breast, the flanks and the upper parts are uniform chestnut. The uppertail-coverts are between brick red and maroon, and the tail is edged with orange. The bill, legs and feet are as in the male.

Etymology. The proposed name is taken from the place of origin of the type specimen.

Acknowledgements

I am deeply grateful to Dr Mary LeCroy of the American Museum of Natural History, Mr Ilaiah Bigilale of the National Museum and Art Gallery in Port Moresby, Mr Graham Cowles formerly of the Natural History Museum at Tring, and Dr Yang Chan Man of the Zoological Section of the National University of Singapore, all for graciously and unconditionally allowing me access to study the collections of specimens in their care. I am most grateful to Dr LeCroy, Dr Luis Bapitista, D. Miguel Lentino, Dr Rene Dekker, Dr David Snow and my friend Derek Goodwin for reading drafts of these notes, and offering comments and advice. This does not mean they agree with my conclusions, and the content and conclusions presented here are totally my own responsibility.

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Range extensions for some birds in northeastern Brazil

by *José Fernando Pacheco & Bret M. Whitney*

Received 7 November 1994

Northeastern Brazil from northern Ceará south to the vicinity of Salvador, Bahia is, from the standpoint of the distributions of birds, among the mostly incompletely documented regions in eastern South America. Range delimitations in this region are, however, particularly important to determine as accurately as possible not only to describe the present geographic limits of birds but also to allow well-informed interpretation of the history of events that have resulted in the present picture here and in eastern Amazonia and southeastern Brazil. This part of Brazil was the first to be colonized by Europeans, and has suffered catastrophic loss of its natural habitat cover (Prado 1956, Andrade 1973). Today, as the dry woodlands, caatingas, and relictual humid forests (including the northernmost vestiges of the Atlantic Forest) of northeastern Brazil are being rapidly destroyed or severely altered by man, it becomes ever more difficult to separate the natural distributions of birds from the artificial state that is an inevitable result of such prolonged and concentrated human presence.

During the course of six field expeditions to northeastern Brazil between September and February 1988–1993, we documented with tape recordings the distributions and behaviours of several species of birds threatened with extinction (Collar *et al.* 1992), and some poorly known endemics (e.g. Whitney & Pacheco 1994). Here we report significant northern range extensions for 13 resident and/or migrant species, and southern extensions for three. A number of these are sight records. Included in this report are also five range extensions documented by Heretiano Zenaide (1954), who collected birds between about 1910 and the 1950s in the vicinity of João Pessoa and other points in the interior of the state of Paraíba, very near the northern limits of the Atlantic Forest. Although Zenaide collected and accurately identified many of the species he described in his book (1954), his relatives inform us that no specimens exist today. His rather obscure work has been almost completely overlooked in statements of the distributions of birds. Among Zenaide's important cited records are the northernmost reports of the seven-coloured Tanager *Tangara fastuosa* (Collar *et al*. 1992). Interpretation of the validity of Zenaide's work is in preparation by Pacheco and Rajão (abstract in III Congresso Brasileiro de Ornitologia 1993). In conjunction with specific localities, we use the standard abbreviations for Brazilian states: AL (Alagoas); BA (Bahia); CE (Ceará); PB (Paraíba), PE (Pernambuco); RN (Rio Grande do Norte); SE (Sergipe).

RUFOUS-THIGHED HAWK *Accipiter erythronemius*

We observed one individual on 18 September 1991 at Barra Nova, CE (5°33′S, 40°05′W). Bonfim, northern BA, is the nearest published record (Pinto 1938), and is apparently the sole published record for Bahia. Additionally, Teixeira (1994) identified this species within iconographic material produced during the 17th century Dutch invasion of northeastern Brazil, and suggested that at some time the species' presence in the northeast might be definitely determined. Often considered a subspecies of Sharp-shinned Hawk *Accipitus striatus*, this taxon was recently treated as an allospecies (Sibley & Monroe 1990).

WHITE-NECKED HAWK *Leucopternis lacernulata*

Zenaide (1954) captured and described this hawk on 31 October 1949 at João Pessoa, PB (7°07′S, 34°52′W). Although he left the identification as *Leucopternis* sp., his description agrees perfectly with that of *L. lacernulata* (Pacheco & Rajão in prep.). The previously published northern limit of this rare Atlantic forest endemic was Alagoas (Pinto & Camargo 1961, Collar *et al*. 1992).

WHITE-TAILED HAWK *Buteo albicaudatus*

Known from central and eastern Brazil from Bahia southward (Pinto 1978, Sibley & Monroe 1990), this species was only recently reported from Maranhão (Roth & Scott 1987) and Piauí (Olmos 1993). We saw one at the airstrip of Natal, RN (5°51′S, 35°15′W) on 17 November 1993 and another at Tianguá, CE (3°13′S, 40°58′W) on 18 September 1991. Considering that this species "is extending its presence in eastern Brazil because of deforestation" (Sick 1993), we suspect that the recent records in northeastern Brazil also represent range expansion.

SPECKLED CHACHALACA *Ortalis guttata*

The previously accepted northern limit for the population of eastern Brazil (*O. g. araucuan*) is "Pernambuco" (Forbes 1881, Sibley & Monroe 1990, Sick 1993). However, Zenaide (1954) included this gamebird in his work on the birds of Paraíba, without specific location. Between the states of Paraíba and Espírito Santo (including eastern Minas Gerais) this species has known localities for six states. Sergipe is the only state within this range without published records, although *O. guttata* presently occurs near Crasto (11°14′S, 37°25′W; Marcelo C. Souza pers. comm.).

BLACKISH RAIL *Pardirallus nigricans*

The published northern limit for this species is Pernambuco (Forbes 1881, Sibley & Monroe 1990). Paraíba is here considered the new limit based on the description under the number 49 in *Aves da Paraíba* (Zenaide 1954, Pacheco & Rajão in prep.). Additionally, the western limit in Brazil, although given as Goiás (Sick 1993), must be changed to Mato Grosso (Cintra & Yamashita 1990) and Mato Grosso do Sul (Pacheco & Bauer 1994).

SOUTH AMERICAN TERN *Sterna hirundinacea*

This coastal tern has been reported north to Bahia (Meyer de Schauensee 1966, Sick 1993) or north to Rio de Janeiro (Blake 1977, Sibley & Monroe 1990). The Bahian record apparently was based on an old specimen without data sent to the British Museum (Saunders 1896).

On 26 November 1993, we observed a group of eight *Sterna* terns near the mouth of the Rio Sergipe at Aracaju, SE. Although the birds were quite distant (500+ m) and useful observations were possible only through a Questar scope, we noted that five of the birds were in full breeding plumage (long forked tails and apparently complete black caps) and showed conspicuous dark 'wedges' at the wing tips, which we estimated to comprise at least the five outer primaries. We suspect that the birds were wintering *S. hirundinacea* that had attained breeding plumage before moving south to breed; it seems less likely that the birds might have been Common Terns *S. hirundo* that atypically had retained breeding plumage into late November. Further field work in coastal Brazil is needed to determine the northern limit of the wintering range of *S. hirundinacea*.

RUDDY QUAIL-DOVE *Geotrygon montana*

Although the range of this species within Brazil is not well specified in recent catalogues (Meyer de Schauensee 1966, Sibley & Monroe 1990), its distribution is primarily coincident with the original area of the Amazonian and Atlantic forests. Its presence in the forests of northeastern Brazil may be pieced together through scattered references: Maranhão (Oren 1990); Pernambuco (Naumburg 1930) and Alagoas (Forrester 1993). In the Atlantic forest this species at least historically extended as far north as Paraíba (Zenaide 1954, Pacheco & Rajão in prep.).

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

This species was recorded only recently in northeastern Brazil, in Alagoas (Teixeira *et al.* 1988). We observed two or three individuals flying overhead at Dois Irmãos, PE (8°03′S, 34°54′W) on 17 November 1993.

LONG-TAILED WOODNYMPH *Thalurania watertonii*

Although the majority of the recent catalogues list this Brazilian endemic as occurring between Pará and Bahia (Meyer de Schauensee 1966, Sibley & Monroe 1990, Sick 1993), only Pernambuco and

Alagoas are known to have specimens with exact localities (Simon 1921, Berla 1946, Pinto 1954). The inclusion of Pará (and its subsequent citation) apparently is based on the highly dubious supposition of Gould (1856) of the provenance of two specimens he examined in the British Museum as probably being from the mouth of the Amazon. Bahia records in the literature are based on trade skins labelled "Bahia" reported by Simon (1897).

We found this species at Itabaiana Biological Reserve, SE, on 25 September 1991. Our record to the south of the Rio São Francisco corroborates the possibility of the existence of this hummingbird in northeastern Bahia at least, from whence probably came the "Bahia" trade skin(s).

The distributional limits of *Thalurania* species in Bahia are very poorly understood. We have been able to find only two published specimen records of the Violet-capped Woodnymph *T. glaucopis* for the state: Rio Gongogí (14°18′S, 39°25′W; Pinto 1935), and near Chapada Diamantina (Grantsau 1988) where we have also observed the species. Sight records by L. P. Gonzaga and ourselves of *Thalurania* from the vicinities of Boa Nova, Porto Seguro, and the Una Biological Reserve all pertain to *glaucopis*. Recent sight records of *T. watertonii* from southern Bahia (e.g. Forrester 1993) should be reconfirmed.

LETTERED ARACARI *Pteroglossus inscriptus*

Outside its widespread Amazonian range, this species has been reported in northeastern Brazil from Pernambuco (Sibley & Monroe 1990, Sick 1993). This historical record was based on one specimen collected on 13 August 1903 by A. Robert of the Tring Museum (Hellmayr 1912, Pinto 1940). We observed several individuals in three forest patches in Alagoas: Rio Largo, 24 October 1990; Passo do Camaragibe, 30 December 1990; and Muricí Biological Reserve (9°15′S, 35°50′W), 4 January 1991.

SPOT-BACKED ANTSHRIKE *Hypoedaleus guttatus*

This antshrike has been reported previously from Bahia south to Santa Catarina (Ridgely & Tudor 1994) and Parque do Turvo (27°15′S, 53°57′W), Rio Grande do Sul (Poerschk 1987). We know of only two specimen records from Bahia: the south-central portion of the state near the Minas Gerais border, collected by Wied in 1831 (Bokermann 1957), and Jaguaquara (13°32′S, 39°58′W), where Kaempfer collected one male and one female at 2500 ft in September 1927 (Naumburg 1935, 1937). Additionally, Gonzaga *et al.* (in press) have found this species in small numbers east of Boa Nova. On 28 November 1993 we heard and tape-recorded *Hypoedaleus* at the Muricí Biological Reserve, AL (9°15′S, 35°50′W), which represents a northern range extension of approximately 600 km. This distribution mirrors that of the sibling species pair *Terenura maculata* (Streak-capped Antwren), known from as far north as Valença, BA (Teixeira *et al.* 1989), and *T. sicki* (Orange-bellied Antwren), known from Muricí and a handful of nearby localities in Alagoas and Pernambuco (Collar *et al.* 1992).

FRINGE-BACKED FIRE-EYE *Pyriglena atra*

This antbird is known only from humid lowland forest in the vicinity of Santo Amaro, BA (Collar *et al.* 1992). Humid forest in this region has been virtually cleared (pers. obs.), and *P. atra* is listed by Collar *et al.* (1992) as "Endangered". In 1994, Marcelo C. Souza of Aracaju, SE, discovered a population of *P. atra* in a humid forest fragment near Crasto, SE (M. C. Souza, pers. comm., and reported in IV Congresso Brasileiro de Ornitologia, 1994), extending the known range of the species northward by about 175 km. In early November 1994 we observed a minimum of six pairs of *P. atra* along a dirt road transecting the forest (11°22′S, 37°25′W; GPS coordinates). This forest may represent one of few remaining strongholds for *P. atra*, and the presence of an apparently healthy population in southern Sergipe suggests that the remaining forests south to the vicinity of Salvador and Santo Amaro (several significant patches noted from the drive along the newly opened "Linha Verde" highway) probably also hold some *P. atra*. Other birds treated by Collar *et al.* (1992) that occur in the Crasto forest include Golden-tailed Parrotlet *Touit surda* ("Vulnerable/Rare") and White-winged Cotinga *Xipholena atropurpurea* ("Rare") (M. C. Souza, pers. obs.). This forest merits high conservation priority.

BARE-THROATED BELLBIRD *Procnias nudicollis*

Although Teixeira *et al.* (1986) reported their records from Alagoas as the first from eastern Brazil north of the Rio São Francisco, it was previously reported "in abundance" at Igaraçu, PE (Berla 1946). Additional early evidence for the presence of *P. nudicollis* in northeastern Brazil is a citation for Paraíba (Zenaide 1954), extending the range even further northward.

SLENDER-FOOTED TYRANNULET *Zimmerius gracilipes*

The presence of this canopy tyrannulet in northeastern Brazil is documented in the literature by a single individual collected at Serra de Baturité, CE (Pinto & Camargo 1961). However, Ridgely & Tudor (1994) included only Alagoas in the range. We have tape-recorded several individuals in the following sites: Murici Biological Reserve, AL, 21 October 1990; Pedra Talhada Biological Reserve, AL, 22 October 1990; and Serra de Baturité, CE, 16 September 1991 and 19 November 1993. In northeastern Brazil this species seems to be restricted to the serras, and is to be expected in other upland localities.

HIGHLAND ELAENIA *Elaenia obscura*

In eastern Brazil this elaenia is known from Rio de Janeiro and central Minas Gerais (vicinity of Belo Horizonte and Caraça) south to Rio Grande do Sul (Sibley & Monroe 1990, Sick 1993, Ridgely & Tudor 1994). The northernmost published report appears to be that of Mattos *et al.* (1991) from Januária, in northern Minas Gerais. On 30 November 1993 we tape-recorded *E. obscura* at Morro do Pai Inácio near Lençóis, central Bahia, which extends the range approximately 450 km to the north. Apparent migratory movements of *E. obscura* in eastern Brazil are poorly understood, but we suspect that further field work will show that it breeds locally in northern Minas Gerais and south-central Bahia. Mention of a Brazilian name for this species in Pernambuco (Sick 1993) should be considered erroneous.

HANGNEST TODY-TYRANT *Hemitriccus nidipendulus*

This tyrannid is reported from eastern Brazil between Bahia and São Paulo (Sibley & Monroe 1990, Sick 1993, Ridgely & Tudor 1994), with the northern limit usually placed in interior central Bahia. However, the northernmost published record appears to be that of Pinto (1935) for Bonfim, BA. On 25 September 1991 we tape-recorded one individual at Itabaiana Biological Reserve, SE, which marks the northeasternmost point of its known occurrence.

CROWNED SLATY-FLYCATCHER *Griseotyrannus aurantiatrocristatus*

On 18 September 1991 we observed a single individual of this austral migrant tyrannid at Tianguá, CE (3°13′S, 40°58′W). Previous records in northeastern Brazil are from Maranhão and Piauí (Hellmayr 1929).

Acknowledgements

We are grateful to Adriana C. Fiuza, Claudia B. Cesar, Paulo Sérgio M. Fonseca, Luiz P. Gonzaga, and Melquiades P. Paiva for their help in gathering material for and comments on the manuscript. Hélio Zenaide kindly supplied information on the collecting activities of his father, Heretiano Zenaide, in Paraíba. During various of our expeditions we benefited from the assistance and companionship of Marcelo C. Souza, Fernando Pinto, José Nogueira, Francisco Pontual, John L. Rowlett, and Richard E. Webster. We are especially grateful to Field Guides Incorporated for funding part of our field research.

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Field notes on corvids in Ethiopia

by Tiziano Londei

Received 20 October 1994

Ethiopia is very interesting for corvids because there are two endemic species (the Ethiopian Bush-Crow *Zavattariornis stresemanni* and the Thick-billed Raven *Corvus crassirostris*) and two isolated populations of a Palearctic species, the Red-billed Chough *Pyrrhocorax pyrrhocorax*. This country is also inhabited by two species (the Black Crow *Corvus capensis* and the Fan-tailed Raven *C. rhipidurus*) which extend their ranges mainly southwards and northwards respectively. Last but not least, hybridization seems to occur here between a Paleotropical crow (the Pied Crow *Corvus albus*) and a form (the Dwarf Raven *Corvus edithae*) which is usually treated as a close relative of the Brown-necked Raven *Corvus ruficollis*, which, in turn, might be a subspecies of the Northern Raven *Corvus corax*, a Holarctic species. The literature on the corvids of Ethiopia is sparse, and their behaviour has hardly been studied. Here, I report a few morphological and behavioural observations on two species, which I made during a tour south of Addis Ababa, 8–21 August 1994. Field notes on a third species, with supporting photographs, are included in a commemorative publication (Londei, in press).

THICK-BILLED RAVEN *Corvus crassirostris*

The adaptive value of its extremely massive bill is unclear. Goodwin (1976) supposed that it has evolved for predation or as a display organ; the following observation supports the latter hypothesis. At Lake Chamo, I saw five Thick-billed Ravens resting on trees together with a larger number of Hooded Vultures *Necrosyrtes monachus*, around a place where fishermen habitually skin large fish and cut them to pieces. As soon as some scraps of fish became available to the birds, the ravens began displacing the vultures one by one and continued until the latter all left the area. I counted about ten threatening approaches in 20 minutes, with the silent raven stretching its neck alternately to either side with deliberate movements, while slowly moving from branch to branch towards its target, with the bill open and throat distended. Such an approach was mostly enough to cause the vulture to fly away, although two individuals that were slow to leave were finally pecked at. With reference to competition between the Thick-billed Raven and vultures, I have only found a sentence in a rather ancient report (Hilgert, in Kleinschmidt 1906) suggesting that even such large vultures as the Lapped-faced *Torgos tracheliotos* or the White-headed *Trigonoceps occipitalis* may fear this raven.

The real power of the Thick-billed Raven's bill as a weapon during interspecific encounters is still to be ascertained, but the 'vulturine' characteristic of having very short (for a corvid) feathering on the head strongly suggests that this species has evolved to feed on meat inside large carcasses. Thus the Thick-billed Raven may have a long history

Figure 1. A so-called Dwarf Raven.

of competition with vultures. Furthermore, I noticed on the above occasion that a raven held a scrap of fish under both feet while tearing at it. Corvids may use both feet (instead of the usual one) for holding large food items, but this item was small and fleshy, suggesting that the tearing technique may be stereotyped, adapted to more difficult tasks. Being strongly arched, the massive bill is also likely to contribute effectively to powerful tearing in this species.

The white patch on the Thick-billed Raven's nape is very bright in the shadow, being often, to the human eye, the only sign of the presence of a bird resting under a tree canopy when the sun is at its highest. I suggest that it may have evolved to allow conspecifics, or interacting species, to detect the bird's presence and appreciate its posture more easily. The almost white tip of the bill may have a similar function at a shorter distance.

DWARF RAVEN *Corvus (ruficollis) edithae*

I observed this form for the first time at El Sod (4°12′N, 38°23′E), which is far from the range of *C. albus*. Nevertheless, I was reminded of the latter more than of ravens as far as general shape was concerned (Fig. 1). In particular, the wings appeared to me crow-like and stumpy compared to ravens' wings, all the more as the presumed closest relative, *C. ruficollis*, has even more slender wings than *C. corax* (Madge & Burn 1994). At a garbage dump, a bird erected the head, bill upward, in front of a conspecific. This display lasted about 2 seconds and only induced the other bird to turn its head away and retreat, but it seemed very significant to me because a chin-up threat display has been reported for *C. albus* (Benson & Penny 1970, in Goodwin 1976). At

Robe (7°08′N, 40°00′E), which is in the known zone of the presumed *albus* × *edithae* hybridization, I saw an all-dark individual, perched on a pole, calling with up-raised bill. I could not hear its voice clearly, but the accompanying movements were very similar to those described by Goodwin (1976) for *C. albus*. This pattern would be unusual for a raven.

These observations support the opinion that *C. edithae* is closely related to *C. albus* (Blair 1961, North 1962), perhaps analogously to the relationship of *Corvus corone corone* to *Corvus (corone) cornix*. If so, *C. edithae* could not be a subspecies of *C. ruficollis*, as in both morphology and behaviour the latter appears to be related to *C. corax* (Goodwin 1976). Instead of Dwarf Raven, the less usual name Somali Crow would be more appropriate. *Corvus edithae* and *C. albus* seem to differ considerably from each other in ecology (Wilson 1990) but this may simply reflect the degree of their geographical separation within Ethiopia.

Concerning the presumed hybrids, I saw intermediate birds also outside the areas mapped by Blair (1961), namely at Dodola (6°58′N, 39°11′E), Bekoji (7°32′N, 39°15′E), Asela (7°57′N, 39°08′E) and Nazret (8°33′N, 39°16′E). These records, together with others published meanwhile (Alamargot 1987, Wilson 1990), extend the overall range of presumed hybridization and make the distribution of this phenomenon less patchy.

Acknowledgements

My sister Raffaella efficiently kept troops of local children at a distance while I was birding. D. Goodwin encouraged me to publish these observations.

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First fossil record of the Great Skua

by Tommy Tyrberg & Francisco Hernandez Carrasquilla

Received 27 August 1994

The Great Skua *Catharacta skua* is very closely related to southern hemisphere *Catharacta*, particularly *C. antarctica* and *C. loennbergi*, with which it has often been considered conspecific (e.g. Cramp *et al.* 1983). The genus *Catharacta* is predominantly southern and the Great Skua is presumably a recent coloniser in the North Atlantic.

Unfortunately direct evidence for this colonisation is virtually non-existent. No fossils of the Great Skua have been reported and we are only aware of a single sub-fossil record from Dollsteinhola cave on Sandsøya (Sunnmøre) in Norway (Lie 1989). The age of this record may be Mid-Holocene (*c.* 5000 BP) but the presence of *Rattus* in the same layer indicates admixture with more recent material. There is apparently no written evidence that definitely indicates the presence of the Great Skua in the North Atlantic before 1605 (Furness 1987).

A tarsometatarsus assigned to *Catharacta* sp. has been found in Neogene (probably Early Pliocene) deposits in North Carolina (Olson 1985, Becker 1987), but the absence of younger records makes it doubtful whether *Catharacta* has been continually present in the North Atlantic since the Tertiary. It may be noted that while fossil skuas are certainly quite rare, there are several Pleistocene records of all three species of *Stercorarius* from the West Palearctic.

Recently one of us (FHC) has identified remains of a large individual, probably a female, of *Catharacta skua* in an epipalaeolithic layer in Cueva de Nerja near Malaga in southern Spain (Hernandez in prep.). The age of this layer is bracketed by C14 dates of 8770 ± 140 BP and 13,330 ± 270 BP (uncalibrated), and the remains are therefore either of latest Pleistocene or early Holocene age. Seabirds are unusually common in the Nerja deposits. In the epipalaeolithic layer *Calonectris diomedea, Puffinus griseus, Morus bassanus, Phalacrocorax aristotelis, Pinguinus impennis* and *Uria aalge* occur in addition to the Great Skua.

The main interest of this record is that it provides a *terminus ante quem* for the colonisation of the North Atlantic by *Catharacta*. It is of course conceivable that the Nerja record might be from a vagrant antarctic bird, but the probability that such a vagrant should both penetrate into the Mediterranean and be preserved as a fossil must be exceedingly small. It would therefore seem that the Great Skua has been in the North Atlantic at least since the Early Holocene. This is consistent with the degree of differentiation of *Catharacta skua* and its closest congeners. Other bird populations that have been isolated since the end of the Pleistocene are either subspecies or barely separated at species level (Tyrberg 1991). It may be noted that the other Antarctic coloniser in the Northern Hemisphere, the Fulmar *Fulmarus glacialis*, which is strongly differentiated from the Antarctic Fulmar *Fulmarus glacialoides*, also has a rather longer fossil record. The oldest fossil of

Fulmarus glacialis is from Skjonghelleren cave (Sunnmøre) in Norway and is dated to *c.* 30,000 BP (Larsen *et al.* 1987).

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On the status of *Ara tricolor* Bechstein

by Michael Walters

Received 7 September 1994

The Cuban Macaw *Ara tricolor* formerly occurred on Cuba and the Isle of Pines. It has been extinct since around 1855 and about fifteen specimens survive in museums in Europe and North America. It was not unlike the Scarlet Macaw *Ara macao*, but was smaller and had a yellowish crown and yellow hindneck. The upper back was red, with green edges to the feathers, the lesser and median wing coverts darker red or maroon, the wings purplish blue, the tail red below and blue above with red bases to the feathers.

Wetherbee (1985, 1986) transferred the name *Ara tricolor* Bechstein (1811) from the extinct Cuban Macaw to an also extinct form from Hispaniola, and renamed the former *Ara cubensis*. His arguments have gained acceptance by the American Ornithologists' Union Committee (A.O.U. 1989).

The basis of Wetherbee's argument is that Cuba was ornithologically unknown until 1822, so that any species described before that date could not have come from Cuba. This is the only argument he puts forward to suggest that *A. tricolor* did not come from there, but it would only be valid if it could be shown that no species had been described from Cuba prior to that date. This is, however, not the case. A search of Bond (1956) reveals at least 4 species described from Cuba in the 18th century: *Amazona leucocephala* (Linnaeus 1758), *Zenaida* *macroura* (Linnaeus 1758), *Melopyrrha nigra* (Linnaeus 1758) and *Tiaris canora* (Gmelin 1789). Furthermore, there is an 18th century specimen of *Ara tricolor* in the Paris Museum (F. Roux pers. comm., discussed below). Wetherbee's entire argument therefore collapses. Having believed he had shown that *A. tricolor* did not come from Cuba, Wetherbee then assumed (without any evidence) that it must have come from Hispaniola, and conducted a detailed search of French naval archives to try to show that the only person in the right place at the right time to have collected the first specimen of *A. tricolor* was the French naval captain Baudin in 1797 (Wetherbee 1988). These researches while probably accurate become irrelevant since there is no reason to doubt that Cuba was the correct locality.

Wetherbee sought to differentiate the Cuban and Hispaniolan Macaws on the grounds that the former had red facial skin and the latter white, overlooking the fact that this is not a diagnostic character since it is well known that the white facial skin of a live macaw will flush to pink or red (George Smith pers. comm.). He further argued that Bechstein's name must have referred to a specimen from Hispaniola, not Cuba, because the plate of Levaillant, on which his description is based, depicts a bird with white skin. As this is not a criterion on which differentiation can be based, *Ara cubensis* must become a synonym of *Ara tricolor*.

The existence of a macaw on Hispaniola is known only from the accounts of Buffon (1779) and other early writers; no specimens are known to have been collected. Buffon noted that macaws were formerly very common in the eastern part of the island. A letter from one of his correspondents indicated that after the French settlements extended to the tops of the mountains, these birds became less common. Clark (1905) considered the bird to be the same as *Ara tricolor*. Rothschild (1905, 1907) disagreed, but never assigned it a name. Greenway (1967) discussed other early references to the Hispaniolan macaw, including the report that its forehead was white, not red, as in the Cuban macaw. Wetherbee may have misinterpreted "forehead" as meaning the facial skin. *Ara tricolor* and the Hispaniolan bird probably formed a superspecies with a similar form, *Ara gossei* Rothschild, from Jamaica. This is known only from a specimen shot about 1765 by a Mr Odell, but no longer extant. It differed from *tricolor* mainly in having a bright yellow forehead (Gosse 1847).

There is a further matter to be discussed. Barraband (not spelled Barraland, *contra* Wetherbee) was the artist who prepared the original water colour paintings for Levaillant's *Histoire Naturelle des Perroquets*. In many cases these are of much higher quality and accuracy than the resultant published plates (George Smith pers. comm.). In 1988, Barraband's supposed water colour for the plate of "L'Ara tricolor" in Levaillant (1801) was reproduced in full colour in a sale catalogue (Sotheby's Monaco 1988). This water colour appears to differ from all known published plates, and specimens, of *Ara tricolor*, in having the "shoulder" of the wing (the lesser wing coverts) bright red, the maroon area being confined to the median wing coverts. I consulted Dr F. Roux of Paris, who kindly advised me (pers. comm.) that the Muséum

National d'Histoire Naturelle has two specimens of *Ara tricolor*, the older one being one of some 90 specimens remaining from the time of Buffon. It is without locality or date, but is believed by the Museum to have been the specimen on which Daubenton's plate in the *Planches enluminées* (see below) was based. There is, however, no evidence that it was the specimen on which Barraband's plate was based, the origin of which is at present a mystery. (The second specimen in Paris was not received till 1842, and is therefore not relevant.)

Bechstein's name, *tricolor*, was based on Levaillant's description, which was in turn based partly on the *Planches enluminées* (Daubenton 1771–86) and partly on a specimen in the Paris Museum, probably the one referred to by Roux above, but there is apparently no specimen which can confidently be claimed as a holotype of *A. tricolor*. Barraband's water colour, therefore, does not appear to affect either the taxonomy or the nomenclature of *tricolor*, but raises the possibility that there may have been another taxon, of which we still know nothing.

Acknowledgements

Dr Clemency Fisher and Dr Gerlof Mees have kindly examined early drafts of this note, and are in agreement with my main conclusions. I am also grateful to both George Smith and Dr Carlo Violani for drawing my attention to the reproduction of the Barraband plate.

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Species status of the Chestnut-throated Huet-Huet *Pteroptochos castaneus*

by Steve N. G. Howell & Sophie Webb

Received 11 October 1994

The tapaculos of the well-marked genus *Pteroptochos* are the largest members of the Rhinocryptidae, a poorly known Neotropical passerine family. From two to three species have been recognised in the genus: the distinctive Moustached Turca *P. megapodius* of central Chile, and one or two huet-huets, the Black-throated *P. tarnii* and Chestnut-throated *P. castaneus*, of Chile's temperate forests. The two huet-huets are allopatric, the former occurring south of, and the latter north of, the Río Bío-Bío (at latitude 37–38° S). Philippi & Landbeck described *P. castaneus* as a full species in 1864. Subsequent opinions on its taxonomic status have mostly treated it as probably or certainly a race of *P. tarnii* (Hellmayr 1932, Behn 1944, Johnson 1967, Fjeldså & Krabbe 1990, Sibley & Monroe 1990). Vuilleumier (1985), however, considered the huet-huets as allospecies, a conclusion followed by Ridgely & Tudor (1994) who noted that the two might nonetheless prove to be conspecific.

We studied both huet-huets in the field during November and December of 1992 and 1993, and here provide the first critical description of the vocalizations of *castaneus*. Recordings were analysed by SNGH using a Kay Elemetrics DSP Sonograph, Model 5500. Dominant frequency was determined from a power spectrum (amplitude [dB] plotted against frequency [Hz]). We also examined 22 museum specimens (7 *castaneus* and 15 *tarnii*, including adults and juveniles of both) at the American Museum of Natural History and the United States National Museum. Distinct differences in voice and plumage, together with ecology, indicate that the two huet-huets are best treated as separate species.

Voice

Previous authors have reported that the songs and calls of the two huet-huets were essentially the same. For example, Johnson (1967) noted that "the rich chestnut-red of the breast and abdomen [of *castaneus*] extends upwards to cover the entire throat and sides of the head. With this exception the two forms appear identical . . . and the same can be said of their habits and call-notes." Ridgely & Tudor (1994) noted "... vocalizations [of *castaneus* are] similar to Black-throated Huet-Huet's", based on Johnson (1967) and our brief experience in 1992 of a single call of *castaneus*.

Our subsequent field experience indicates that while the songs of the two huet-huets are similar, they are readily distinguishable in the field, as are the alarm calls. The song of *castaneus* (Fig. 1A) is an intensifying

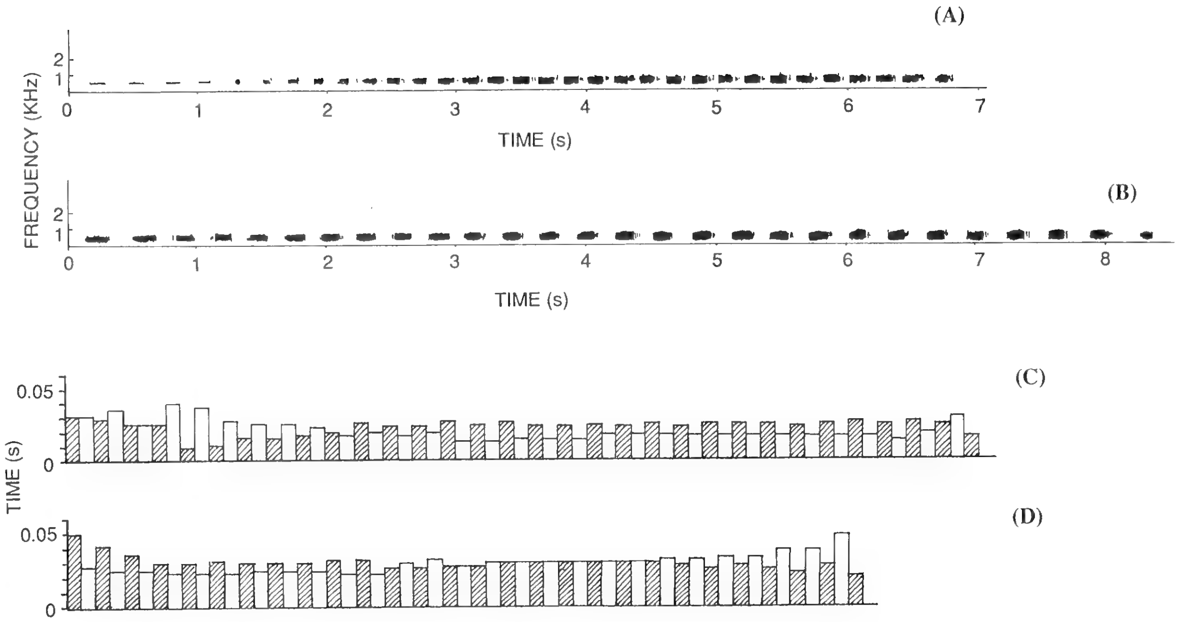

Figure 1. Spectrograms and histograms of songs of Chestnut-throated Huet-Huet *Pteroptochos castaneus* (A and C; Parque Nacional Laguna del Laja, 18 November 1993) and Black-throated Huet-Huet *P. tarnii* (B and D; Parque Nacional Puyehue, 17 November 1993). In histograms, shaded bars represent notes, unshaded bars represent inter-note intervals. Note faster-paced, slightly higher-pitched song of *castaneus*, with soft introductory notes and then short notes becoming longer than inter-note intervals, versus longer but fewer notes of *tarnii* becoming shorter than inter-note intervals. Recordings by Howell.

series of resonant hoots, often with a slight quavering quality which may suggest a screech-owl (*Otus*). It is higher, softer, and faster-paced, less gruff, than the song of *tarnii*, lacking the deep, pulsating quality of that form. Songs consist of more notes (32–45) than *tarnii* (20–29) and have a dominant frequency of 500–600 Hz. Notes overall are 0.04–0.15 s in duration, with inter-note intervals of 0.06–0.15 s (Fig. 1C). The first few notes are soft and the main part of the song consists of notes that increase from 0.07 to 0.13 s in duration while the inter-note intervals decrease from 0.13 to 0.09 s; notes change quickly from being shorter than to longer than inter-note intervals, rather than changing from longer to shorter in *tarnii* (compare Fig. 1C and 1D). Thus, unlike *tarnii*, the song speeds up overall in tempo and ends abruptly. It may be written as *weh-weh-weh-weh-wuubwuubWuubWuub* . . ., and lasts about 6–8 s, with individual notes too fast to count (5 notes/s). We heard at least five birds singing this song type in two areas about 6 km apart in Parque Nacional Laguna del Laja, Bío-Bío prov. (37° 21′ S), and another bird singing along Highway 115, near Las Garzas, Talca prov. (35° 48′ S).

The song of *tarnii* (Fig. 1B) is a powerful, pulsating, far-carrying series of deep, slightly resonant hoots. Songs we have recorded comprised 27–29 notes (Ridgely & Tudor [1994] reported 20–25 notes), with a dominant frequency of 400–500 Hz. Notes overall are 0.10–0.25 s in duration, separated by inter-note intervals of 0.12–0.24 s (Fig. 1D). After the relatively long first three notes, the notes are fairly uniform in length, decreasing slightly overall from 0.15 to 0.12 s while the inter-note interval increases from 0.12 to 0.19 s (Fig. 1D). Thus the song slows overall in tempo and seems to run down slightly at the end; the last note is shortest (0.10 s) and separated from the rest of the song by a relatively long interval (0.24 s). The song may be written as *Woooh, WoohWoohWooh . . . wuh*, and lasts 7–9 s; the tempo is usually slow enough to count individual notes (3.5 notes/s). We have heard this song type throughout the range of *tarnii* from Parque Nacional Nahuel Buta, Malleco prov. (37° 53′ S) to Puerto Aísen, Aísen prov. (45° 12′ S).

The alarm calls of the two Huet-Huets are also quite different. This call in *tarnii* (Figure 2A) is a slightly liquid, powerful, relatively low-pitched, often persistent clucking, *huet huet-huet-huet huet huet-huet, huet* . . . with up to ten notes in rapid series; the common two-note phrase is the onomatopoeic derivation of this species' common name. (This is *not* the song as suggested by Fjeldså & Krabbe [1990].) The call covers a greater frequency range than *castaneus*, with the energy concentrated in a low-pitched, drip-like bulge (compared Figs 2A and 2B). When birds are excited, these calls are given most rapidly and are spaced 0.20–0.21 s apart.

The alarm call of *castaneus* (Fig. 2B) is a quite different sounding, slightly nasal clucking, *wehk wehk-wehk-wehk wehk-wehk wehk wehk* . . ., which SNGH mistook for a squirrel when he first tape-recorded it, even though he was familiar with the analogous call of *tarnii*. The call lacks the energy concentration at low frequency of *tarnii*, sounds higher-pitched, and is faster-paced (notes 0.10–0.13 s apart) when birds are excited.

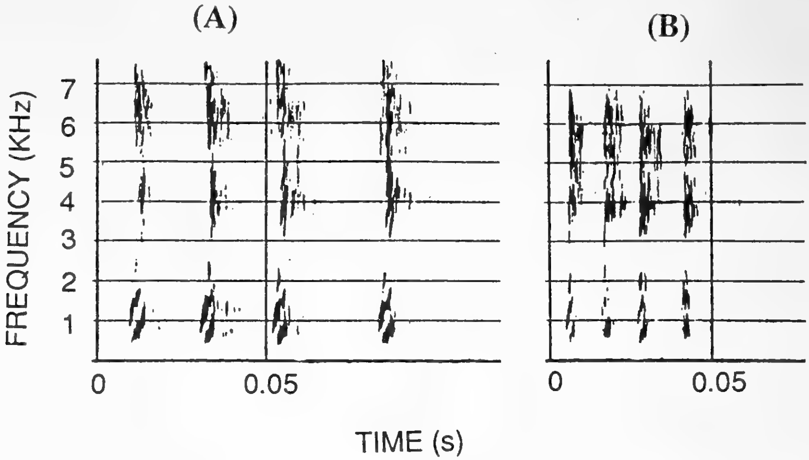

Figure 2. Spectrograms of alarm calls of Black-throated Huet-Huet *Pteroptochos tarnii* (A), and Chestnut-throated Huet-Huet *P. castaneus* (B). Compare broader overall frequency range of *tarnii*, concentrated in a low-pitched, drip-like bulge, versus narrower frequency range of faster-paced *castaneus* calls. Locations and dates as Fig. 1. Recordings by Howell.

In addition to these vocalisations, *tarnii* in November and December frequently gave a variety of other calls. These included a gruff, intensifying *woohr woohr woohr* . . .; varied series of loud, sharp, hollow hoots, the first note often slightly explosive, the series usually descending overall and increasingly slower-paced, *wook! wook wook wook* . . .; a steady-paced, shorter series of hoots, *wook wook wook* . . .; and a single, loud, slightly hollow *huuk*! In contrast, other than songs and alarm calls, we heard only one *castaneus* give any other call type, and then only once, in 1992: a sharp nasal note followed by a steady-paced series of hollow hoots, *wehk! wook wook wook* . . ., analogous to a call of *tarnii*. Whether *castaneus* really is less vocal in general, or whether this difference may reflect some seasonal difference, related perhaps to nesting season, remains to be shown.

Plumage

Hellmayr (1932) and Ridgely & Tudor (1994) are the only authors to have noted differences other than throat and chest colour between the two huet-huets. For example, Fjeldså & Krabbe (1990) dismissed the plumage differences as "Ssp *castaneus* has throat rufous-chestnut like chest"; and see the quote from Johnson (1967) at the start of the voice discussion.

The two huet-huets, in fact, look strikingly different. The forecrown, supercilium, throat, foreneck, and upper chest of *castaneus* are deep, rich chestnut; the auriculars, hindcrown, and hindneck are dark slaty blue-grey; a bold whitish eye-ring is more distinct in life than in skins

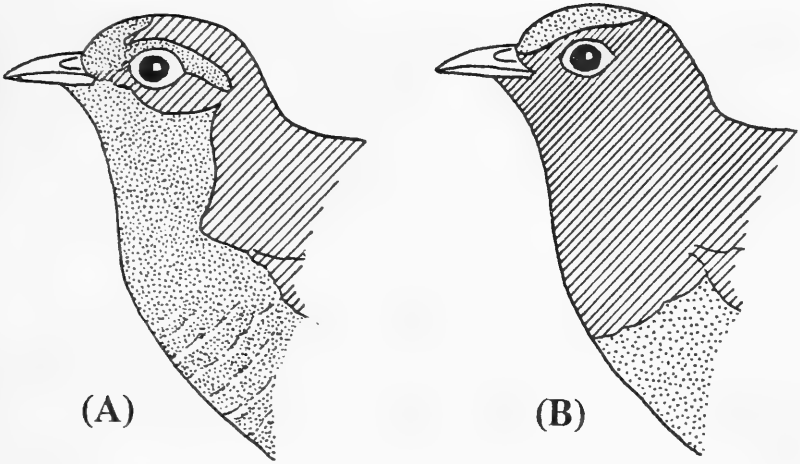

Figure 3. Head and chest patterns of Chestnut-throated Huet-Huet *Pteroptochos castaneus* (A) and Black-throated Huet-Huet *P. tarnii* (B). Hatching represents slaty blue-grey in A, slaty grey in B; stippling represents chestnut in A, rufous in B.

(Fig. 3A). The head, neck, upper chest, and back of *tarnii* are overall dark slaty grey with a rufous crown patch extending back to the hindcrown; the eye-ring appears narrower than on *castaneus* (Fig. 3B). Besides the obvious pattern differences, the red on the crown is darker and less extensive, and the grey hindneck brighter and bluer in *castaneus*.

The chest of *castaneus* is rufous, slightly paler than the foreneck, and with some paler barring, while the belly, flanks, and undertail coverts are boldly scalloped black, buff, and olive-tawny to rufous. The lower chest, belly, flanks, and undertail coverts of *tarnii* are rufous with variable black and cinnamon scalloping. In the field the underparts of *castaneus* appear boldly scalloped, with obvious pale chevrons, whereas the underparts of *tarnii* appear rufous with fewer dark chevrons.

Castaneus has slaty olive-grey upperparts, the rump washed with cinnamon-rufous and barred black and pale buff distally. The upperparts of *tarnii* are slaty grey, washed olive on the lower back, with the rump contrastingly rufous and barred black and cinnamon-buff distally. Thus the upperparts of *castaneus* are generally paler and browner, with more distinct pale rump bars, and lack the contrasting rufous rump of *tarnii*.

The wings of *castaneus* are rich olive-brown with narrow whitish scallops on the lesser coverts, a cinnamon bar on the tips of the median coverts, and a broader and paler cinnamon-buff bar on the tips of the greater coverts; these wing-bars are distinct in the field. The wings of *tarnii* appear uniform slaty olive-brown overall, with dull and poorly contrasting chestnut tips to the coverts not visible in the field. The tail of *tarnii* is blackish, darker than the blackish-brown tail of *castaneus*.

Juveniles are duller overall than the adults. Relative to the adult, juvenile *castaneus* has an indistinct face pattern with the chestnut areas washed dusky and the grey areas washed brownish olive. The throat, foreneck, and underparts are dusky chestnut, mottled dusky pale cinnamon on the lower chest, with duller cinnamon bars on the belly, flanks, and undertail coverts. Juvenile *tarnii* has the crown sooty grey with broad, dull rufous streaks; the rump and lower chest to undertail coverts are dusky chestnut with indistinct black bars.

Ecology

The two huet-huets live in somewhat different habitats, although this may be more due to different climate (particularly less rainfall as one moves north) than habitat choice *per se* by the birds. *Tarnii* inhabits the forest floor and understory thickets (especially bamboo) of humid temperate rain forest. It also occurs in second-growth, logged areas where it tends to be restricted to streamsides, and other areas with sufficient undergrowth such as tall bamboo thickets. *Castaneus* inhabits the forest floor and understory (especially bamboo) of humid to semiarid forest, chaparral-woodland, and adjacent chaparral thickets where it may favour gullies with running water (and lusher vegetation). It thus occurs in drier and slightly more open habitats than *tarnii*.

Both species are generally shy and elusive, especially when singing, and run quickly and silently with their tail held level or slightly cocked. Huet-huets are often most conspicuous when agitated, and giving their *huet-huet* call, when a bird may perch in the open on bamboo or tree branches, cocking and dipping its tail. Their very large feet with long claws are used for scratching in leaf litter to expose their insect food. The birds may scratch and dig with one foot at a time, like a chicken, or 'jump-scratch' with both feet simultaneously, a habit recalling the Emberizine towhees *Pipilo* and Fox Sparrow *Passerella iliaca* of North America. These feeding techniques are shared with the other *Pteroptochos* species, the Moustached Turca *P. megapodius*. Fjeldså & Krabbe (1990) questioned this foot-scratching behaviour since they knew of no tapaculos that fed in that manner. In fact, the presence of huet-huets can be detected readily by diagnostic raked or cleared areas on the forest floor. We have also watched the Ochre-flanked Tapaculo *Eugralla paradoxa* foraging by scratching and jump-scratching with its feet in bamboo litter. Further, in July 1994 SNGH watched Ocellated Tapaculos *Acropternis orthonyx* in Ecuador scratching with their feet, to the extent that they dug holes up to 15 cm deep in mats of loose, dead bamboo litter and remained there out of sight for minutes at a time, scratching loudly.

Conclusions

The differences in songs and calls of the two huet-huets are distinct, and appear consistent throughout the ranges of the two forms; also, we have not heard the songs or calls of one species within the range of the other. These vocal dissimilarities parallel the well-known and striking plumage differences. No signs of plumage intergradation have been reported although the two forms occur within a few km of one another, such as on either side of the mouth of the Bío-Bío river (Behn 1944, Ridgely & Tudor 1994). These plumage differences are greater than those among any subspecies and many closely related species of tapaculos. The two forms also occupy slightly different habitats. Thus we recommend that the doubt surrounding the species status of the Chestnut-throated Huet-Huet *P. castaneus* be removed, and that it be considered a full species, separate from the Black-throated Huet-Huet *P. tarnii*

Acknowledgements

We thank Luis F. Baptista, at the California Academy of Sciences, for making available his sound analysis laboratory and for helpful comments on spectrogram interpretation. The curators and personnel at the American Museum of Natural History and U.S. National Museum allowed us to examine specimens in their care. Robert S. Ridgely kindly reviewed the manuscript. This is contribution 647 of Point Reyes Bird Observatory.

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A critique of Walters' (1993) new bird records from Belize

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Received 23 August 1994

Walters (1993) reported records of six species of birds from Belize (formerly British Honduras), Central America, based primarily on birds banded between 1960 and 1964 by W. P. Nickell. Although five of these species would represent first records for the country, a review of the records in a wider context casts doubt upon their authenticity. It should be remembered, however, that during the early 1960s little or no literature was available to correctly identify Central American birds in the field, or to evaluate the significance of such records.

NORTHERN PYGMY-OWL *Glaucidium gnoma*

Walters (1993) reported two records of birds banded in the vicinity of Mountain Pine Ridge, which he claimed to be an area of "highland pine forest". He considered the records "not unexpected" since *G. gnoma* occurs in the highlands of Guatemala and Honduras.

Elevations in Mountain Pine Ridge "range from 1000 to 3000 feet" (i.e. 300–900 m) (Russell 1964) and, despite the dominance of pines (*Pinus caribaea*, a species common at sea level in northern Central America), the avifauna is distinctly tropical, or at best marginally subtropical. Also, the two localities noted by Walters (1993), San Antonio and Guacamallo Bridge, are at lower elevations around the periphery of Mountain Pine Ridge proper, where pines meet humid evergreen forest. Species common at these sites include many widespread tropical lowland species such as White Hawk *Leucopternis albicollis*, Scaled Pigeon *Columba speciosa*, and Barred Antshrike *Thamnophilus doliatus* (pers. obs.). Further, the Ferruginous Pygmy-Owl *G. brasilianum* is common around San Antonio, as it is throughout the pines of Mountain Pine Ridge (pers. obs.), and the Central American Pygmy-Owl *G. griseiceps* (Howell & Robbins 1995), a representative of the Least Pygmy-Owl complex, would also be expected at Guacamallo Bridge. The only Belize record for Least Pygmy-Owl noted by Russell (1964) was from "Southern [=Mountain] Pine Ridge". (This species is characteristic of lowland rain forest (Howell & Robbins 1995) and is not common in Mountain Pine Ridge, as stated erroneously by Wood *et al.* (1986).)

Although in Guatemala *G. gnoma* has been reported from 400–2600 m (Land 1970), this lower elevational limit is almost certainly in error, probably based upon Griscom (1931, 1932) who confused distinctions between the Northern and Least (*G. minutissimum*) pygmy-owl groups and mistakenly lumped the two. Records of *G. gnoma* from Honduras are from 1700–2000 m (Monroe 1968) and the species' elevational range in southern Mexico is 2000–3000 m (Binford 1989, pers. obs.) which probably reflects its true distribution in Guatemala. Throughout its range, *G. gnoma* is a bird of temperate habitats. Thus I question the identification of birds banded in Belize as *G. gnoma*, a highland species otherwise unknown from that country, and which would, *contra* Walters (1993), be highly unexpected in tropical pine woods.

WESTERN WOOD-PEWEE *Contopus sordidulus*

The only prior report of this species from Belize is for December 1881 (Russell 1964, Wood *et al.* 1986). Since Western Pewees migrate primarily through the highlands of Mexico and Central America, and winter in South America (A.O.U. 1983, Howell & Webb 1995), this record is highly questionable, being out of range and out of season (e.g. the latest autumn date for Honduras is 11 October; Monroe 1968). Further, separation, even in the hand, of the sibling Western Pewee and Eastern Pewee (*C. virens*; a common passage migrant in Belize from early March to mid May) can be extremely difficult, and is not always possible (Pyle *et al.* 1986).

The record reported by Walters (1993), and indeed this species' place on the Belize list, is best considered hypothetical.

CASSIN'S KINGBIRD *Tyrannus vociferans*

This species winters south in the interior and on the Pacific Slope of Middle America to northwestern Guatemala, rarely to Honduras (A.O.U. 1983, Howell & Webb 1995); it is rarely recorded as a vagrant in well-watched areas of eastern North America (A.O.U. 1983). The basis for the Belize record listed by Wood *et al.* (1986) is unclear (D. S. Wood *in litt.*) and consequently the reports of Walters (1993) would constitute the first records for Belize.

Although the occurrence of Cassin's Kingbird in Belize is possible, I suggest that the species' place on the Belize list, including the five undocumented records listed by Walters (1993), be considered hypothetical, since no other observers have reported this species from Belize; Cassin's Kingbird is known from one record in Honduras (whence, presumably, spring migrants to Belize would originate); and field identification of kingbirds has been treated inadequately in bird guides for Mexico and Central America.

WESTERN KINGBIRD *Tyrannus verticalis*

While this species, which winters on the Pacific slope and in the interior of Middle America south to Costa Rica, could occur as a vagrant to Belize, its presence on the Belize list should be confirmed by more than an undocumented banding report from an observer responsible for other questionable records.

GREY KINGBIRD *Tyrannus dominicanus*

The two records reported by Walters (1993) fit into the pattern of two well-documented recent records (Howell *et al.* 1992), with all four occurring from 17 March to 3 April, and thus may have been identified correctly.

HUTTON'S VIREO *Vireo huttoni*

Hutton's Vireo has been attributed traditionally as occurring in Mountain Pine Ridge, Belize, based on an 1888 specimen (Russell 1964, Wood *et al.* 1986). However, Phillips (1992) examined this anomalous specimen and found that it is a Solitary Vireo *V. solitarius*, a small race of which has long been known as a resident in Mountain Pine Ridge. Thus there is no evidence for the presence of Hutton's Vireo in Belize, and its occurrence there is at best highly unlikely on biogeographic grounds.

Walters' (1993) reports of Hutton's Vireo from the southern hardwood forests of Belize, a habitat unknown for the species, are thus not credible. Perhaps, like the old specimen, they may refer to the Solitary Vireo, an apparently resident population of which was reported recently from the hardwood forests of southern Belize (Parker *et al.* 1993).

The questions surrounding the above records highlight the danger of relying on undocumented banding records from poorly known tropical localities and show that, even though a bird has been examined in the hand, it may not have been identified correctly. It also may be noted that the only two reports of Orange-crowned Warbler *Vermivora celata* from Belize, correctly considered hypothetical by Russell (1964), are birds captured for banding by Nickell in 1961.

Thus the reports of *Glaucidium gnoma* and *Vireo huttoni* reported by Walters (1993) surely refer to misidentified birds, while the reports of *Tyrannus vociferans, T. verticalis* and *Contopus sordidulus* are at best considered hypothetical. I thank Stephen M. Russell for reviewing a copy of this note.

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Taxonomic relationships in Namibian Black Tits *Parus* spp.

by P. A. Clancey

Received 5 November 1994

Resolution in taxonomic terms of the complex mosaic presented by the largely contiguous forms of three melanistic *Parus* spp. found to converge in the southwestern African interior has been addressed in several contributions to the periodic literature ever since Macdonald & Hall (1957) described Carp's Tit *Parus carpi* from northwestern Namibia. These workers introduced *carpi* as a subspecies of the wide-ranging Southern Black Tit *Parus niger* Vieillot, and their understanding of its status was followed in Peters' *Check-List* by Snow (1967), but rather earlier, in Clancey (1964), it had already been demonstrated that *carpi* was perhaps better associated with the White-winged Black Tit *Parus leucomelas* Rüppell, and especially its southern race *P. l. insignis* Cabanis, described from central Angola (see also Clancey 1985). This last-named taxon is a strict endemic of the extensive *Brachystegia* woodland savanna biome of a large swathe of south-central Africa, the so-called Miombo. Interestingly, Winterbottom (1971), after three major collecting expeditions to Namibia in the 1960s in association with the State Museum, concluded, erroneously, that *carpi* was a straight synonym of *P. niger* (=*P. n. xanthostomus*). Other melanistic congeners occurring in the more arid parts of the southern Afrotropics affect different woodland facies, except, in part, for *P. niger ravidus* Clancey, which is largely based on the *Brachystegia* savanna tracts of Zimbabwe and the Mozambique lowlands to the east.

In the *S.A.O.S. Checklist* (Clancey 1980), the decision was made to treat *carpi* as a species distinct from both *P. niger* and *P. leucomelas*. This conclusion was based on the study of a large series of 68 examples of *carpi* (42 from Namibia and 26 from Angola) and a voluminous material of *P. niger* populations and of *P. l. insignis*. In a major revisionary study of world parids, Eck (1988) associated *carpi* with the *leucomelas* group, while in a more recent comment on the disputatious issue of the status of *carpi*, Dowsett & Dowsett-Lemaire (1993) return to the view that it is simply a subspecies of *P. niger*, basing their conclusions on voice recordings, which are nevertheless equivocal in face of the range overlap of *carpi* and *niger* in north-central Namibia (C. J. Brown, pers. comm.).

Findings in Namibia which go far to resolving the impasse which has developed over the status of *carpi* have recently been drawn to my attention by Dr C. J. Brown of the Directorate of Environmental Affairs, Windhoek. These findings result from team work carried out in recent years, especially in the Waterberg region at 20° 28′ S, 17° 13′ E, on behalf of the Namibian Bird Atlas Project by Dr Brown and his co-workers, and substantiate the conclusion arrived at earlier on museum research and analysis carried out in South Africa, that two melanistic tit species are present in the Namibian avifauna. In the

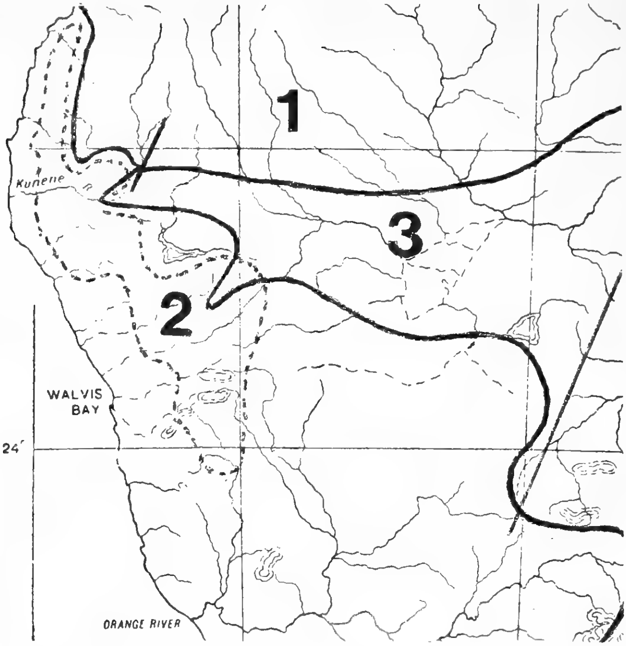

Figure 1. Sketch-map of Namibia and adjacent territories showing the points of range overlap between the melanistic tits occurring in the region south of the Kunene and Okavango Rivers. 1, *Parus leucomelas insignis* (allopatric); 2, *Parus carpi*; 3, *Parus niger xanthostomus*. The pointed apices of the range of *P. n. xanthostomas* on the left indicate the centres of overlap between it and *P. carpi*. (Based on data assembled for the Namibian Bird Atlas Project.)

Waterberg, the two parids are locally in contact, with the Southern Black Tit confined to the moist summit levels of the upland, being replaced peripherally at lower elevations in similar but drier habitat by Carp's Tit. There is no indication that the two tits hybridize or behave in their contact zones as other than discrete species. Maps supporting these findings have kindly been made available for the present paper by Dr Brown, and form the basis for Figure 1.

In the case of a second point of contact between the two tits located on the Kunene R. on the Namibian border with Angola at *c.* 14° 20′ E, such data as are available show it to be comparable in nature to the situation present further south in the South West Arid Zone where the Acacia Grey or Ashy Tit *Parus cinerascens* Vieillot meets the Southern Grey *Parus afer* Gmelin along the Orange R., again without hybridization (see Clancey 1958).

Turning to the relationship of *P. carpi* to the White-winged Black Tit, one is faced with a lack of supporting field evidence from critical parts of southwestern Angola. With Angola still embroiled in civil war and the southern and eastern parts of the state likely to remain hazardous to travellers for years to come because of land-mines, opinion on the taxonomic status of *carpi* vis-a-vis *P. l. insignis* must rest on the readily available specimen and ecological evidence. *P. carpi* exhibits affinity with *insignis* in having the dorsal and ventral surfaces equally glossed blue-black in both sexes and the closed wing with a like largely unbroken white panel, but differs in its much smaller size and weaker bill, thus: *P. carpi* wings of ♂♂ 80–84, of ♀♀ 74.5–80, tails 62–69, 61–68.5, culmens from skull 12–12.5, 11.5–12 mm; in *P. l. insignis* ♂♂ have wings 93–97, ♀♀ 86–91, tails 71–80.5, 71–76, culmens 14–15, 14–14.5 mm (after Clancey 1972). Other criteria are the whiter outer edges of the tail and the fact that the female has the face and upper fore-throat olive-brown, *versus* blue-black in *insignis*. Ecologically the two parids are discrete, with *carpi* a denizen of arid bushveld associations, whereas *insignis* is an endemic form confined to the *Brachystegia* woodland savanna. There is no intergradation or hybridization between them at the present time, but elements of both may have been in sympatric contact at some long past stage of their history.

The southern race of the White-winged Black Tit *P. l. insignis* extends south, north of *P. n. xanthostomus*, to *c.* 15° S in Angola and Zambia, ranging east to southeastern Tanzania and adjacent Malawi in the high interior. Generally regarded as an endemic of the Miombo biome of south-central Africa, Benson *et al.* (1971) show that in Zambia at least it is more closely associated with bush in open country, as opposed to predominant *Brachystegia* woodland (Miombo), which there is favoured by *P. n. xanthostomus*. Its status to the west of Zambia is unclear, as its occurrence in the Angola/Namibian vegetational ecotone has not been closely studied, which habitat type favours *niger* rather than *leucomelas*, which has, however, been taken south of Lubango in Huila in the southwest, and to the east in southern Angola at 15° S in Cuando-Cubango. The two melanistic tits here interdigitate in accord with vegetational shifts in the northern parts of the ecotone.

P. l. insignis differs from *P. n. xanthostomus* in its greater size, more glossy blue-black dorsal and ventral surfaces, whiter wing-panels and lack of white in the outer tail. For further data see Clancey (1972). The two tits are ecologically disparate, and are vocally readily distinguishable.

In the case of the melanistic species present in Namibia, these may be differentiated from both *P. l. insignis* and one another on the basis of the following criteria.

Parus niger

Parus niger xanthostomus Shelley, 1892: Victoria Falls, Zambezi R., Zimbabwe. Synonym: *Parus fuelleborni* Reichenow, 1900: Undis, Songea district, Tanzania (see Eck 1988). Male with upperparts muted glossed blue-black; underside more matt black with dull blackish 'shadow' abdominal streak and greyish flanks. Female with less blackish underside than male, the face and ventral surface deep olivaceous grey. Wings of ♂♂ 85–89, ♀♀ 80–84, tails 72.5–78, 70–77, culmens from skull 12.5–13, 11.5–13 mm.

Range. East and north-east of *P. carpi* in Namibia and southern Angola east to Botswana and the mid-Zambezi valley south of *P. l. insignis*, east locally to the Luangwa Valley, Zambia, Malawi, adjacent northern Mozambique and marginally in southeastern Tanzania beyond the limits of the Miombo biome. In bushveld associations with rainfall generally >500 mm p.a. The small Waterberg, Namibia, population forms an isolate, surrounded by *carpi*.

Parus carpi

Parus carpi Macdonald & Hall, 1957: Warmquelle, Kaokoland, Namibia. Differs from *P. n. xanthostomus* in being deeper and glossier blue-black over the upperparts, the underside similar. Wing with a largely unbroken white panel over the coverts, extending to the remiges. Size much smaller and bill shorter and more gracile. Sexes virtually alike, but female with face and upper fore-throat washed with olive-brown. Measurements given above in text.

Range. Central and northern Namibia from 24° S north, west of the Etosha Pan, to the lower Kunene R., thence through southwestern Angola west of the escarpment to Moçamedes, western Huila and Benguela to about 12° S. Occurs in a zone of contact with *P. n. xanthostomus* in the Waterberg to the south of the Etosha Pan and again in riverine woodland where the Kunene first enters Namibian territory. Affects a drier bushveld habitat than *P. n. xanthostomus*, with rainfall <500 mm p.a.

Comment. The taxa *P. n. xanthostomus* and *P. carpi* comprise a case of secondary contact, resulting from a recent range expansion by the former. Instructively, the entire southern assemblage of melanistic forms presents a highly confusing distributional mosaic, with *P. n. niger* Vieillot: eastern Cape, like *xanthostomus* also occurring in a bushveld habitat and resembling it closely in plumage characters. These two forms are now separated by the intrusive *P. n. ravidus* Clancey, described from 'Mkien', near Bulawayo, Zimbabwe, centred on the *Brachystegia* woodland savanna lying to the south of the middle and lower Zambezi in both Zimbabwe and southern Mozambique, in which taxon the largely unbroken white wing panel, characteristic of Miombo black tit populations further north in the Afrotropics, is once again to be found. It differs from them, however, in the female plumage, which is very light greyish below.

To conclude, it is now established that the two melanistic tits in Namibia are taxonomically and ecologically distinct, mainly allopatric species which are narrowly sympatric at two points.

A comparable but more extended condition of contact is presented where the Southern Black Tit *P. n. xanthostomus* meets the White-winged Black Tit *P. l. insignis* in southern Angola and regions to the east; the two species are here abruptly separated along ecological (biome) lines, and do not hybridize. The complex of tit taxa currently present in the Southern African Sub-Region derives from environmental factors underlying a phase of widespread speciation in the recent past.

Acknowledgements

I am deeply indebted to Dr C. J. Brown of the Namibian Directorate of Environmental Affairs, Windhoek, for kindly drawing my notice to the important work on melanistic tits recently carried out by him and members of his Namibian Bird Atlas Project team and for furnishing supportive range maps and data arising from their joint field research in Namibia.

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IN BRIEF

ADDITIONAL RECORDS OF RANGE EXTENSION IN THE HOUSE CROW *CORVUS SPLENDENS*

Further to the review of the distribution of the House Crow *Corvus splendens* published recently in this journal (Ryall 1994), other supplementary reports have now come to light and are presented below.

Europe

Netherlands

Two House Crows were discovered at Hoek van Holland on 10 April 1994 and at least one was still present in late May 1995. They feed primarily on leftovers from several fish restaurants but also forage around the piers of the adjacent waterway, the Nieuwe Waterweg, which they have crossed on at least one occasion (G. Steinhaus). They often associate with Jackdaws *C. monedula* when feeding and roosting in tall trees in the area.

The closeness of this site to a major shipping route and port suggests their arrival on board a ship. At least one of the birds appears to be a juvenile and probably of the nominate race (pers. obs.), judging from a photograph published in *Dutch Birding* 16(4).

Middle East

Qatar

House Crows have recently been seen in Qatar (F. E. Warr), presumably having spread from the neighbouring territories where the species is well established.

Africa

Republic of South Africa

A pair of birds and two single birds were seen at Cape Flats, Cape Town, in December 1989 and January 1990, respectively (Watt-Pringle 1990).

The Americas

U.S.A.

The first reported sighting of a House Crow in North America was of a single bird seen in New Jersey in June 1971 (Gill 1985). It was suspected as having arrived aboard a ship.

Nugent (1984) saw a House Crow at Mount Pleasant near Charleston, South Carolina, in October 1984. He recalled that one was seen to fly ashore from an Indian cargo vessel in Charleston Harbour in September 1974, and that another, presumably the same bird, was seen at nearby Mount Pleasant shortly afterwards. A series of further sightings were made in the area over the following 2 years (Post *et al.* 1988) and the authors speculated that all these records involved a single bird, despite the time span of 12 years.

Chile

There has been an unconfirmed report by a Chilean ornithologist of two birds closely resembling House Crows in the port of Punta Arenas, where they have stayed through the austral summer of 1993/4 (S. Madge).

These supplementary records for the Middle East and southern Africa reflect expansions of populations already well established in the region. The records on the east coast of the U.S.A., and most probably in Chile, represent long distance extensions of the House Crow's range.

I would like to thank G. Steinhaus, F. E. Warr and S. Madge for providing recent information on the species.

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FIRST RECORD OF THE NORTHERN GIANT PETREL *MACRONECTES HALLI* FOR BRAZILIAN WATERS

The Northern Giant Petrel *Macronectes halli* is found in the southern seas, from 55 to 25°S, commonly north of the Antarctic Convergence, but occasionally reaching 15°S in cold water zones (Harrison 1987). In eastern South America the species now breeds in South Georgia, being found along the coast up to Uruguay (Harrison 1985, Sick 1993). Specimens of *Macronectes* positively identified in Brazilian waters have all been found to belong to the sibling species *M. giganteus*, which is fairly commonly recorded during the winter (from July to late September) from Rio Grande do Sul to Rio de Janeiro (Belton 1984, Vooren & Fernandes 1989, Moraes & Krull 1993, Sick 1993, Olmos *et al.* 1995), with a summer record from São Paulo (Olmos *et al.* 1995).

On 27 September 1994 an immature bird, with plumage agreeing with the second stage juvenile of Harrison (1985), was found dead on the beach at Ilha Comprida (*c.* 24°50′S, 47°45′W), southern coast of São Paulo state. The bird was very fresh, but had already been attacked by Turkey Vultures *Cathartes aura*, which had removed all viscera and most muscle. Measures of the fresh bird were: bill 105, wing 510, tail 157 and tarsus 105 mm. The rosy bill showed the diagnostic reddish point in both maxillae. The prepared skin is now at the Museu de Zoologia of the Universidade de São Paulo (MZUSP).

During the previous two days of the finding, strong winds from southeast blew along the entire state coast, bringing many dead and dying seabirds and cetaceans. Along the 70 km-long beach of Ilha Comprida we also found five Manx Shearwaters *Puffinus puffinus*, eight Brown Boobies *Sula leucogaster*, one Yellow-nosed Albatross *Diomedea chlororhynchus*, three White-chinned Petrels *Procellaria aequinoctialis*, one (live) South Polar Skua *Catharacta maccormicki* and one (live) Pomarine Skua *Stercorarius pomarinus*. A Rough-toothed Dolphin *Steno bredanensis* had also stranded. The impact of such strong winds on seabirds in southeastern Brazil has been discussed by Olmos *et al.* (1995).

Compared to *Macronectes giganteus, M. halli* is considered to be more sedentary (Harrison 1983), which may account for its rareness in Brazilian waters. Nevertheless observation cruises off the Brazilian coast have been too few to make safe assessments about the status of Antarctic and Sub-Antarctic migrants there.

We wish to thank Antonio and Cleide Neves for providing transport and the pleasure of their company during fieldwork. Dr. Helio Camargo from the MZUSP also assisted us in safeguarding the specimen. W. C. A. Bokermann made relevant comments on other *Macronectes* records from São Paulo. Special thanks to Miriam Milanelo for support and patience during all parts of our work.

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FIRST RECORD OF GIANT SNIPE *GALLINAGO UNDULATA* FOR BOLIVIA

The Giant Snipe *Gallinago undulata* is known from scattered localities in open marshy areas and savanna in lowland South America, primarily at subtropical latitudes, north and south of the Amazon Basin. Although recorded from Brazil and Paraguay, no definite record existed previously for adjacent Bolivia (Remsen & Traylor 1989, *contra* Olrog 1968, Meyer de Schauensee 1970).

I tape-recorded the nocturnal display calls of *Gallinago undulata* on 6 April 1993 at Flor d'Oro, Parque Nacional Noel Kempff Mercado, department of Santa Cruz, Bolivia, coordinates 13°32′S, 61°00′W, elevation about 200 m. Flor d'Oro is on the western bank of the Río Iténez (called the Rio Guaporé in Brazil), which forms the border with Brazil. The bird displayed at 21.00 hrs, about 2 hours after dusk; it was calling from the direction of savanna habitat, similar to that depicted and described in Haverschmidt (1974). The Flor d'Oro savanna is also on sandy oil, completely covered with grass, and dotted with shrubs and short trees. It also has low-lying areas with ankle-deep water, at least in March and April (the end of the rainy season). As in the locality described by Haverschmidt, the South American Snipe *Gallinago*

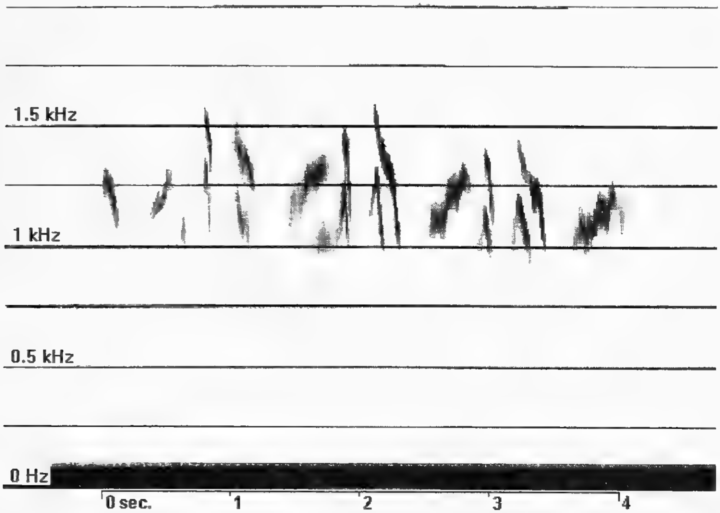

Figure 1. Display call of Giant Snipe *Gallinago undulata* at Flor d'Oro, Bolivia, April 1993. Tape-recorded by the author.

paraguaiae also occurs in the Flor d'Oro savanna. In fact, both species are heard displaying on my tape-recording. Sick (1993) also stated that *G. undulata* is often syntopic with *G. paraguaiae*.

The display call of *G. undulata* (Fig. 1) is described by Sick (1993) as "... 2–5 sonorous cries like 'HO-go, go' or 'Ga-ga, ga' with a human timbre, translated by country people as 'agua-só, o-rapaz', or 'rola-pau'." Sick stated that these calls are uttered high in the air. He also mentioned a loud buzz, presumably a mechanical sound produced in flight, as in various other snipes. I was not able to verify whether the calls came from the air, nor did I hear the buzz, perhaps because the bird displayed quite far away.

I thank Gregory F. Budney and his collaborators at Cornell Library of Natural Sounds for providing a sonagram of a known recording of *G. undulata*, and Torben Dabelsteen at the Zoological Museum in Copenhagen for letting me use the Kay Sonagraph. I also thank J. V. Remsen for reviewing the manuscript.

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21 October 1994

THE NAME OF A PROPOSED EASTERN RACE OF THE GREENSHANK

In a short contribution on geographical variation determined in the Eurasian Greenshank *Tringa nebularia* (Gunnerus), 1767: Trondheim, Norway, based on a study of the entire series in the collection of The Natural History Museum, Tring, during the course of a visit in September 1985, I advocated recognition of a far eastern race (see Clancey 1986, *Durban Mus. Novit.* 14: 8–9). Currently, this Palaearctic wader is treated as monotypic, but the extensive synonymy given in Hartert, *Vög. pal. Fauna*, vol. 2, 1912–1921, pp. 1614–1615, and Hartert & Steinbacher, *Ergänz.*, 1932–1938, p. 478, reveals that many earlier researchers were fully aware that the species varied morphologically to a greater or lesser extent. The Tring series revealed that far eastern birds in freshly assumed non-breeding dress were markedly paler dorsally than the western differentiates, with broader and whiter feather edgings to both the upper-parts and wings, and ranged somewhat larger in size (as determined many years ago by Vigors 1831). The breeding range of this eastern form of the Greenshank seemingly extends from Siberia east of the Yenesei R. to the Anadyr region, Kamchatka and the coasts of the Sea of Okhotsk, with transient birds occurring numerously after breeding throughout China and the Indo-Chinese countries to winter in Indonesia and the Philippines, south to Australasia. Only a single African specimen agreed with the eastern form, that being a skin from Mazabuka, Zambia (5 April 1932). Afrotropical material studied both at Tring and in southern African collections is characteristic of western breeders, which winter mainly in Africa and along the southern Asiatic coasts to the east.

In the 1986 contribution it was suggested the issue of a subspecific name for the eastern race could be resolved by resuscitating Brehm's *Glottis albicollis* of 1855, with type-locality "Asia, north-eastern Africa, seldom in south-eastern Europe". On reconsidering the case, the over-riding requirements of priority and appositeness are seemingly to be better met by employing the much earlier *Totanus glottoides* Vigors, *Proc. Zool. Soc. London* 1831, p. 173: Himalayas, the type-locality here adjusted to the *eastern Himalayas* in order to embrace the far eastern Palaearctic breeders which pass through China and adjacent Indo-Chinese countries after nidification. This adjustment takes into consideration the widespread occurrence of nominate *T. nebularia* in eastern and peninsular India, as mentioned in the 1986 contribution, which clearly negotiate or otherwise circumvent the main Himalayan and Tibetan barrier to the immediate west.

The trinomen of the eastern subspecies of Greenshank will now stand as *Tringa nebularia glottoides* (Vigors), 1831: eastern Himalayan Mountains.

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P.A. CLANCEY

1 September 1994

AMERICAN DIPPER *CINCLUS MEXICANUS* IN VENEZUELA

Three species in the genus *Cinclus* occur in the Americas: the Rufous-throated Dipper *C. schulzi* in northwestern Argentina and adjacent Bolivia, the White-capped Dipper *C. leucocephalus* in Bolivia, Peru, Colombia and northwestern Venezuela; and the American Dipper *C. mexicanus* from Alaska to western Panama (Ridgey & Tudor 1989, Sibley & Monroe, 1991). (The record of an American Dipper on the river Cana in Darien, eastern Panama, is not now accepted; R. S. Ridgely *in litt.*)

In 1992 and 1994 an expedition of the Moravian Museum visited some parts of Venezuela. Among the places visited was the montane rainforest of San Esteban in Carabobo State. Despite the fact that this locality is situated in a densely populated area along the coast northwest of Caracas it is, owing to its difficult access, the steep mountain slopes, and the nature protection policy, surprisingly fresh and well preserved. The expedition found shelter in an abandoned cottage on the slope of a valley about 4 km above the village of San Esteban near the port of Puerto Cabello. This cottage is surrounded by a former cocoa and banana plantation which is being rapidly overgrown by the surrounding forest. The San Esteban stream runs down the valley, with countless rapids and waterfalls, and the river-bed is strewn with boulders. Squeezed between the steep forested slopes are numerous pools with crystal-clear water.

Along this stream the members of our team regularly observed uniformly brownish-grey dippers, at elevations of about 500–900 m. Walking against the current of the stream is very difficult and, in some places, impossible without special equipment. The stream is, however, more or less followed by a path, which in places goes down to the water. Thus it was possible to climb up into the hills to a spot called by the local people 'the Spanish bridge' (the remains of a bridge from the times of Spanish colonisation). The dippers were observed along the entire 4–5 km long section of the stream, from our base at the cottage up to the ruins of the bridge. In March 1992 we repeatedly saw three birds, and in February 1994 four.

We are very familiar with the European Dipper *C. cinclus*; it is hardly possible to confuse it with any other bird. The birds that we saw at San Esteban were exactly the same in appearance and behaviour as their European counterparts, including their flight call. They bobbed in typical manner, perched on rocks in the stream, and when disturbed would fly low over the water to another rock. When we waded upstream (collecting different kinds of fish for subsequent check of parasitic contamination), a dipper would fly ahead of us in this way, for some distance, then suddenly turn round and fly back past us, presumably having reached the end of its territory. We did not, however, try to study their feeding behaviour, so cannot say anything about their swimming or walking underwater.

As far as we could tell, these birds agreed closely in plumage colour with the American Dipper, and we assume that they must have been of this species. But, being so isolated from the rest of the species (by *c.* 1600 km), they may well be subspecifically distinct.

Our expedition to Venezuela was made at the invitation of a non-governmental organization FUDECI, by its president the late Dr Francisco Carillo Batalla. We are grateful to Dr Robert S. Ridgely for commenting on an earlier draft of this paper.

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28 November 1994

Books Received
Bull. B.O.C. 1995 115(3)

BOOK RECEIVED

Howell, Steve N. G. & Webb, Sophie 1995. *A Guide to the Birds of Mexico and Northern Central America*. Pp. xvi+851. 71 coloured plates, 44 text-figures, maps. Oxford University Press. ISBN 0-19-854013-2 (Hbk), 0-19-854012-4 (Pbk). £25.00 (Pbk). 23.5 × 16 cm.

This impressive book, by authors (Sophie Webb also the artist) who have published many of their original findings in this *Bulletin*, deals with 1060 species and fills a major gap in the world coverage of birds in up-to-date guides. Between it and the Stiles & Skutch work on Costa Rica, only a fraction of Honduras and the greater part of Nicaragua remain uncovered. It follows a pattern that is now more or less standard for modern guides of this kind, with colour plates in a block in the middle and text for each species that deals in detail with identification (including voice), summarises habitat, and gives information on distribution by means of a map (surely the most accurate available for this part of the world) supplemented by abbreviated notes on status, abundance, movements and altitudinal range. The colour plates are generally excellent, 7 showing raptors in flight outstanding. As a guide to one of the ornithologically richest parts of the world, this book is unlikely to be superseded for a very long time.

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Payments should be sent to the Hon. Treasurer, S. J. Farnsworth, Hammerkop, Frogmill, Hurley, Maidenhead, Berks SL6 5NL, U.K., or credited direct to the Club's bank account—No. 10211540, Sort Code 20 00 87, at Barclays Prime Account, Dale House, Wavertree Boulevard, Liverpool L7 9PQ, U.K., with confirmation to the Hon. Treasurer. All payments are net and should be in Sterling if possible. Payment in other currencies must include a further £4 for U.K. Bank Charges (except for annual rates in U.S. Dollars which are inclusive).

CORRESPONDENCE

Correspondence on all other matters should go to the Hon. Secretary, Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K. For details of Club Meetings see inside front cover.

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Other Publications:
The Bulletin of the British Ornithologists' Club Volume 112a

Centenary Issue

"AVIAN SYSTEMATICS AND TAXONOMY"

Edited by Dr J. F. Monk
with a Preface by Professor Ernst Mayr
Price £32.00 (US$64.00) including postage/packing

"EXTINCT AND ENDANGERED BIRDS IN THE COLLECTIONS OF THE NATURAL HISTORY MUSEUM"

by Dr A. G. Knox & M. P. Walters
Price £30.00 (US$60.00) including postage/packing

The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

ISSN 0007-1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 115 No. 4 December 1995

FORTHCOMING MEETINGS

Tuesday, 23 January 1996. Professor R. J. Chandler will speak on **"Waders in Western Australia".** Professor Chandler, of Imperial College, will be well known to members of the Club particularly for his outstanding photography of birds, especially waders.

Please note change to previously published programme.

*Those wishing to attend are asked to send notification by Tuesday, 9 January 1996, to the Hon. Secretary Designate.**

Tuesday, 20 February 1996. James A. Jobling will speak on his researches for his **Dictionary of Scientific Bird Names.** The Dictionary is much appreciated by all who have an interest in ornithology. Mr Jobling is presently working on the second edition and is also preparing the etymological notes for future volumes of HANZAB and working on a dictionary of English bird-names.

*Those wishing to attend are asked to send notification by Tuesday, 6 February 1996, to the Hon. Secretary Designate.**

Saturday, 23 March 1996—9.30 a.m.—A one day Joint Meeting arranged with the **LINNEAN SOCIETY OF LONDON**

"Avian Taxonomy—from Linnaeus to DNA"
to be held at the Society at **Burlington House,**
Piccadilly, London.

For details of this meeting please see the leaflet enclosed in *Bull. B.O.C. 115(3)* or apply to the Hon. Secretary (address below).

Tuesday, 23 April 1996. Mr David Fisher will speak on **"Birds of Mongolia".**

*Those wishing to attend are asked to send notification by Tuesday, 9 April 1996, to the Hon. Secretary Designate.**

**Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hampshire GU31 5PA*
Telephone and Fax (01730) 825280 for late acceptances and cancellations.

Evening meetings are held in the Sherfield Building of Imperial College, South Kensington, London at 6.15 p.m. for 7 p.m. A map showing Imperial College will be sent to members on request.

Overseas Members visiting Britain are particularly welcome at meetings. Details can be obtained from the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB. Telephone (01572) 722788.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 115 No. 4 Published 29 December 1995

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club was held in the Ante-room of the Sherfield Building, Imperial College, London SW7 on Tuesday 23 May 1995 at 6 p.m. Mr D. Griffin was in the Chair. 16 Members were present.

The Minutes of the Annual General Meeting held on 24 May 1994, which had been published (*Bull. Brit. Orn. Cl.* 114: 137), were approved and signed by the Chairman.

The Report of the Committee for 1994, which had been published (*Bull. Brit. Orn. Cl.* 115: 1–2), was presented and on the proposal of the Honorary Secretary, seconded by Mrs Mary Muller, it was unanimously received and adopted. The Chairman thanked the Secretary for her work during the year arranging the meetings and ensuring the smooth running of Club affairs.

The Editor said that he did not propose to make any changes to the *Bulletin*; he would maintain it within the limited range of 64 to 72 pages. Contributions continued to come in at a steady rate and intake was largely unchanged over the last 4 years. He had received many complimentary comments on the *Bulletin*, especially the last 2 issues. It is of an increasingly high standard and is an important source of original information. It maintains a wide variety of papers and has become known as the only international ornithological journal to "sit down and read".

Mr Gladwin had obtained sponsorship which had made it possible to include more black and white plates and it was hoped to include one colour plate a year, probably largely funded by the author, which would add to the attractiveness of the journal. There had been many congratulations on the colour plate of the Javan Scops Owl *Otus angelinae*, which accompanied Dr Becking's paper.

The Chairman thanked the Editor for his report and for another excellent volume of the *Bulletin* in 1994.

There being no additional nominations, the following were declared elected:

Hon. Secretary: Mrs A. M. Moore (re-elected) until 31 December 1995 and Commander M. B. Casement, O.B.E., R.N. to succeed her from 1 January 1996.
Hon. Treasurer: S. J. Farnsworth (re-elected)
Committee: Dr R. Prŷs-Jones and N. H. F. Stone (*vice* Dr R. A. Cheke and Dr J. F. Monk, who retired by rotation and were ineligible for re-election).

The Chairman thanked Dr Cheke for his very active service on the Committee particularly as convenor of the Occasional Publications sub-Committee and as coordinator of the joint meeting with the Linnean Society to be held in 1996. The Committee is grateful that he has agreed to continue to serve in these capacities *ex officio*.

The Chairman said he wished to renew the Club's thanks to Dr James Monk, in his absence, for all the work he has done for the Club over many years as Committee Member, Editor and Chairman. He wished to thank Dr Monk particularly for his generosity in setting up a new Publications Fund to support Club Publications other than the *Bulletin*. By the sale of books donated from his library he had launched the fund with £2400, and it is hoped that other Members will consider contributing to this fund.

Besides thanking the Officers and Committee for their work during the year the Chairman thanked the members of the Occasional Publications sub-Committee, Professor Richard Chandler for making facilities available to the Club at Imperial College, Mr R. Kettle for supervising the slide-projection equipment, and Mr P. J. Sellar for arranging the sound equipment, at meetings.

The Chairman said that unfortunately the Accounts for 1994 had not yet been audited, although the Committee had seen draft accounts showing a surplus of about £1500 over the year. The Treasurer had asked for a postponement of the consideration of the accounts.

On the proposal of the Chairman, seconded by the Honorary Secretary, it was unanimously agreed to adjourn the Meeting until 18 July 1995 at the same place for presentation and acceptance of the Accounts for 1994.

The meeting was adjourned at 6.20 p.m.

The adjourned Annual General Meeting on 18 July 1995 was cancelled because of the disruption of the rail services and took place on Tuesday, 19 September 1995

The Annual General Meeting of the British Ornithologists' Club adjourned from 23 May 1995, was resumed on 19 September 1995 in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6 p.m. with Mr D. Griffin in the Chair. 17 Members were present.

The Accounts for 1994 were presented. It was proposed by the Honorary Treasurer, seconded by the Honorary Secretary, that the Accounts for 1994 be received and adopted and this was carried unanimously. The Chairman thanked the Treasurer and the Trustees of the Herbert Stevens Fund.

No other business had been notified in accordance with Rule (12).

The meeting closed at 6.25 p.m.

The eight hundred and fifty-second meeting of the Club was held in the Senior Common Room of the Sherfield Building at Imperial College, on Tuesday 19 September 1995 at 6.15 p.m. 27 Members and 9 Guests attended.

Members attending were: D. GRIFFIN (*Chairman*), R. D. MEDLAND (*Speaker*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, Mrs D. BRADLEY, P. J. BULL, Cdr M. B. CASEMENT, D. R. CALDER, Dr R. A. CHEKE, S. J. FARNSWORTH, C. A. R. HELM, Ms R-M. JONES, R. KETTLE, Dr C. F. MANN, D. J. MONTIER, Dr G. M. MOREL, Dr M-Y. MOREL, R. G. MORGAN, Mrs A. M. MOORE, Mrs M. MULLER, R. E. F. PEAL, Dr R. PRŶS-JONES, Dr R. SELF, Dr D. W. SNOW, N. H. F. STONE, Dr A. TYE.

Guests attending were: Mrs J. Bull, Mrs F. M. Farnsworth, R. Gilby, Dr G. Graves, Miss K. Hoff, N. Hunter, Mrs M. Montier, P. J. Moore, Dr H. Tye.

Mr Bob Medland spoke after dinner on "An overview of the birds of Malawi".

From an ornithological viewpoint, Malawi may be divided into three regions. The far north (including the montane habitats of the Nyika Plateau) shares affinities with East and West Africa. Species such as Black-faced Tauraco *Corythaixoides personata* reach their southernmost limits from the east and the range of Black-backed Barbet *Lybius minor* just reaches the Nyika from West Africa. The central plateau west of the Rift shares much of the *Brachystegia* avifauna of southern-central Africa whereas the south and east parts of the country form the northernmost extensions of range for many southern African species.

Several mountain ranges, including the Mulanje massif in the south (3000 m a.s.l.), have extensive rocky outcrops which provide breeding habitat for small but scattered populations of Black Stork *Ciconia nigra* and Verreaux's Eagle *Aquila verreauxi*. House Martin *Delichon urbica* has not been definitely recorded roosting in southern Africa: possibly sun-warmed rock faces are undiscovered roost sites. Montane grassland of the Nyika is a stronghold for Blue Swallow *Hirundo atrocaerulea* and Wattled Crane *Bugeranus carunculatus*. Montane and submontane rainforests form the most important habitat ornithologically. The majority of these are now island habitat capping hilltops and are becoming increasingly isolated as a result of deforestation in the intervening areas. *Brachystegia* woodland covered much of the country but much has been cleared for agriculture: little remains outside protected reserves. Dzalanyama Forest remains the stronghold of Stierling's Woodpecker *Dendropicos stierlingi*. Seasonally inundated, grassland valleys known as 'dambos' are a common feature of the plateau, important for breeding flufftails and wintering rallids and palaearctic warblers. *Acacia* woodland is present in two forms: around the Central Region is an area of dense *Acacia/Piliostigma/Combretum* woodland of which the only extensive remaining example is Lilongwe Nature Sanctuary in the centre of the capital city. *Acacia* savanna is found at lower altitudes in the Rift. Extensive wetlands are found also in the Rift Valley.

With a high population growth rate, combined with exhaustion of virgin land for subsistence agriculture, the country is now facing severe conservation problems. Whilst 13% of the land is protected as either Wildlife or Forest Reserves, these are coming under increasing pressure for degazetting and clearance. The greatest area of concern is the integrity of the sub-montane rainforests, e.g. Mulanje Mt and Thyolo Mt, in the south, habitat for the near-endemic and endangered Thyolo Alethe *Alethe choloensis*.

British Ornithologists' Club
Financial statements for the year ended 31 December 1994

Statement of Committee Members' responsibilities

The Committee is required to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the Charity at the end of the financial year and of the surplus or deficit for that period.

In preparing the financial statements, suitable accounting policies have been adopted and consistently applied to the best of the Committee's knowledge and belief, by reference to reasonable and prudent judgements and estimates. Applicable accountancy standards have been followed.

The Committee members are responsible for maintaining adequate accounting records for safeguarding the assets of the Charity and for preventing and detecting fraud and other irregularities. The Committee members are also required to indicate where the financial statements are prepared other than on the basis that the Charity is a going concern.

Income and Expenditure Account for the year ended 31 December 1994

	1994		1993	
	£	£	£	£
INCOME				
Subscriptions received				
Members	5,032		4,660	
Non-member Subscribers	3,002		2,547	
Inland Revenue tax recovered (Deeds of Covenant: subscriptions)	346		360	
		8,380		7,567
Donations received		31		17
Investment income				
Stevens Bequest Fund: NCL Fund Managers	5,931		4,565	
Barrington Trust Fund (COIF Income Shares)	34		33	
Interest received:				
Barclays Prime Account	95		129	
COIF Deposit Accounts (Nos. 1 & 2)	1,978		3,472	
		8,038		8,199
Publications				
Bulletin back numbers	912		1,036	
Bulletin reprints	130		153	
"Avian Systematics & Taxonomy"	742		2,150	
"Birds, Discovery and Conservation"	102		660	
"Extinct and Endangered Birds"	2,259		—	
		4,145		3,999
Cost of sales				
Opening Stock	(100)		(100)	
Closing Stock	100		100	
		—		—
Meetings				
Ordinary Meetings	4,327		3,766	
Centenary Dinner	6		58	
		4,333		3,824
Miscellaneous income				
Club ties	107		163	
Club brooches	524		—	
Miscellaneous	269		—	
		900		163
Total income		25,827		23,769
EXPENDITURE				
Subscription recruitment		112		209
Meetings				
Ordinary Meetings: Restaurant/Room Hire Charges	4,411		3,710	
Speakers/Notices etc	259		390	
Bar Facility Charges	286		317	
		4,956		4,417
Centenary Dinner		—		74
Bulletin BOC				
Publication and Printing	10,695		9,124	
Additional Reprints	415		208	
		11,110	9,332	
Editor's honorarium		800		750
Editorial and secretarial expenses		108		14
Address labels		440		527
Postage		1,187		1,293
		13,645		11,916

Expenditure *continued*

"Avian Systematics and Taxonomy"				
Publication and printing	167		693	
Editorial expenses	—		38	
Notices	69		54	
Postage: Current	34		225	
: 1993	—		15	
		270		1,025
"Birds, Discovery and Conservation"				
Contribution, publication and printing	—		3	
Postage	5		76	
		5		79
"Extinct and Endangered Birds"				
Publication and printing	2,628		—	
Editorial expenses	108		89	
Notices	82		—	
Postages	294		—	
	3,112		89	
Less reimbursible BEF Loan	(1,000)		—	
		2,112		89
Committee Administration				
Postage	343		409	
Stationery and printing	400		523	
Secretarial	234		65	
Telephone	105		173	
Travel	21		—	
		1,103		1,170
Depreciation (projection equipment)		10		10
Miscellaneous				
Insurance	130		75	
Audit fees: Ordinary Funds	950		947	
Herbert Stephens Fund	120		117	
Bank charges	19		90	
Credit card charges	65		47	
Miscellaneous	65		48	
Miscellaneous: 1993 Adjustment	—		77	
Bulletin back numbers	65		—	
Club brooches	742		—	
		2,156		1,401
Total expenditure		24,369		20,390
Excess of Income over Expenditure		1,458		3,379

Balance Sheet as at 31 December 1994

	1994		1993	
	£	£	£	£
General Fund				
Balance at 1 January 1994	32,896		29,517	
Surplus of income over expenditure	1,458		3,379	
Balance at 31 December 1994		34,354		32,896
Barrington Trust Fund				
Balance at 1 January 1994 and at 31 December 1994		577		577
Stevens Bequest Fund				
Balance at 1 January 1994	144,953		145,017	
Loss on sale of Freehold property	—		(64)	

Transfer adjustment to BOC	(17)			
Loss on sale of investments	(1,095)		—	
Balance at 31 December 1994		143,841		144,953
		178,772		178,426
Represented by:				
Barrington Trust Fund Investment				
Charity Fund 111.57 COIF Income shares				
—at cost (Market value 31/12/94 £710; 31/12/93 £777)		577		577
Stevens Bequest Fund Investments				
NCL Fund Managers		143,841		144,953
Fixed Assets				
Projection Equipment		70		80
Current Assets				
Stock of Publications	100		100	
Cash in Hand	40		43	
Cash at Bank				
—Barclays Prime Account	5,702		3,686	
—Barclays Prime (Centenary) Account	—		129	
—COIF Deposit Account	39,979		18,314	
—COIF No 2 Account	—		18,653	
Sundry Debtors	370		490	
		46,191		41,415
Current Liabilities				
Subscriptions received in advance				
—Members	2,009		2,129	
—Non-member Subscribers	620		1,623	
—Members refund	—		20	
Sundry Creditors	9,278		4,827	
		(11,907)		(8,599)
		178,772		178,426

NOTES TO THE ACCOUNTS

(1) Basis of Accounts
The financial statements are prepared under the historical cost convention.

(2) Depreciation
Depreciation is calculated to write off fixed assets over their expected useful lives, by reference to the original cost or subsequent valuation.

(3) Stock
Stock is valued at the lower of cost and estimated net realisable value.

(4) The financial statements presented here are a condensed version of the audited fully detailed accounts for the year ended 31 December 1994, a copy of which may be obtained on request from the Honorary Treasurer.

Stevens Bequest Fund Investments
Balance Sheet as at 31 December 1994

	1994		1993	
	£	£	£	£
General Fund Assets				
Investments at Cost (Market value £144,042: 1993 £155,032)	142,904		137,308	
Current Assets				
Gartmore Deposit	—		7,645	
Midland Bank SARA	937		—	
Net Current Assets		143,841		144,953
		143,841		144,953

Stevens Bequest Fund Investments as at 31 December 1994

	1994		1993
	£	£	£
General Fund			
Balance at 1 January 1994	144,953		144,953
Withdrawn by BOC	(17)		—
Loss of Sale of Investments	(1,095)	143,841	—
Balance as at 31 December 1994		143,841	144,953

REPORT OF THE AUDITORS

To the Members of

THE BRITISH ORNITHOLOGISTS' CLUB

We have audited the financial statements which have been prepared under the accounting policies set out in the Notes to the Accounts.

RESPECTIVE RESPONSIBILITIES OF COMMITTEE MEMBERS AND AUDITORS

As described in the statement of Committee Members Responsibilities the committee members are responsible for the preparation of financial statements. It is our responsibility to form an independent opinion, based on our audit, on those financial statements and to report our opinion to you. It is also our responsibility to state the fact in our report if we are of the opinion that the Charity has not maintained a satisfactory system of control over its transactions.

BASIS OF OPINION

We conducted our audit in accordance with Auditing Standards issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements. It also includes an assessment of the significant estimates and judgements made by the directors in the preparation of the financial statements, and of whether the accounting policies are appropriate to the company's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatements, whether caused by fraud or other irregularity or error. In forming our opinion we also evaluated the overall adequacy of the presentation of information in the financial statements.

OPINION

In our opinion the Financial Statements give a true and fair view of the state of the Charity's affairs at 31 December 1994 and of its surplus for the year then ended.

Prince Albert House
20 King Street
Maidenhead, Berks
11 July 1995

DONALD REID & CO
Registered Auditors

Approved by the Committee on 19 September 1995
D. GRIFFIN, Chairman

A new species of the genus *Hylexetastes* (Dendrocolaptidae) from eastern Amazonia

by José Maria Cardoso da Silva, Fernando C. Novaes & David C. Oren

Received 14 November 1994

The Red-billed Woodcreeper *Hylexetastes perrotii* and the Uniform Woodcreeper *H. uniformis* were first considered to be two independent species (Hellmayr 1908, 1910), but later they were merged in a single polytypic species, *H. perrotii* (Cory & Hellmayr 1925, Pinto 1938, 1978, Peters 1951). Recently, Ridgely & Tudor (1994) suggested that *H. perrotii* and *H. uniformis* should be regarded as separate species again.

H. perrotii was described by Lafresnaye in 1844, possibly from a specimen collected at Cayenne, French Guiana (Hellmayr 1908, 1910). Its range includes eastern Venezuela, the Guianas, and northern Brazil, south to the north bank of the lower Amazon (Fig. 1). *H. uniformis* was described by Hellmayr (1908) based on specimens collected in Calama, Amazonas, on the right bank of the Madeira River. Its distribution includes all the region south of the Amazon between the Madeira and Xingu Rivers (Fig. 1).

One specimen of a possible undescribed taxon of the genus *Hylexetastes* was collected in the northern part of the Brazilian state of Mato Grosso (Base Camp, 12°54′S, 51°52′W), between the Araguaia and Xingu Rivers (Fry 1970). This specimen represented the first documented record of *Hylexetastes* east of the Xingu River. Since 1984, the ornithology section of the Museu Paraense Emílio Goeldi (MPEG) has collected ten new specimens of *Hylexetastes* for the region between the Xingu and Tocantins-Araguaia Rivers. The examination of these specimens confirms that the population of *Hylexetastes* from this region represents a new taxon, which may be known as:

Hylexetastes brigidai sp. nov.

Holotype. Museu Paraense Emílio Goeldi (MPEG) no. 37215, collected by M. S. Brígida and R. S. Pereira on 25 June 1985 in the Serra dos Carajás, Serra Norte, Distrito do Manganês, Pará, Brazil, 6°06′S, 50°18′W, *c*. 600 m above sea level. The specimen is an adult male (testes 6 × 3 mm) with a completely pneumatized skull.

Diagnosis. *H. brigidai* can be distinguished from the nearest *H. uniformis* by the following characters: (a) the chin and throat washed with Yellow Ocher, (b) belly Buff barred with Clay Color (Fig. 1), and (c) under wing-coverts crossed with dusky bars. *H. brigidai* differs from *H. perrotii* by the following: (a) lores Pale Gray rather than whitish, (b) lack of the conspicuous white malar stripe (Fig. 1), and (c) colour of belly a little lighter.

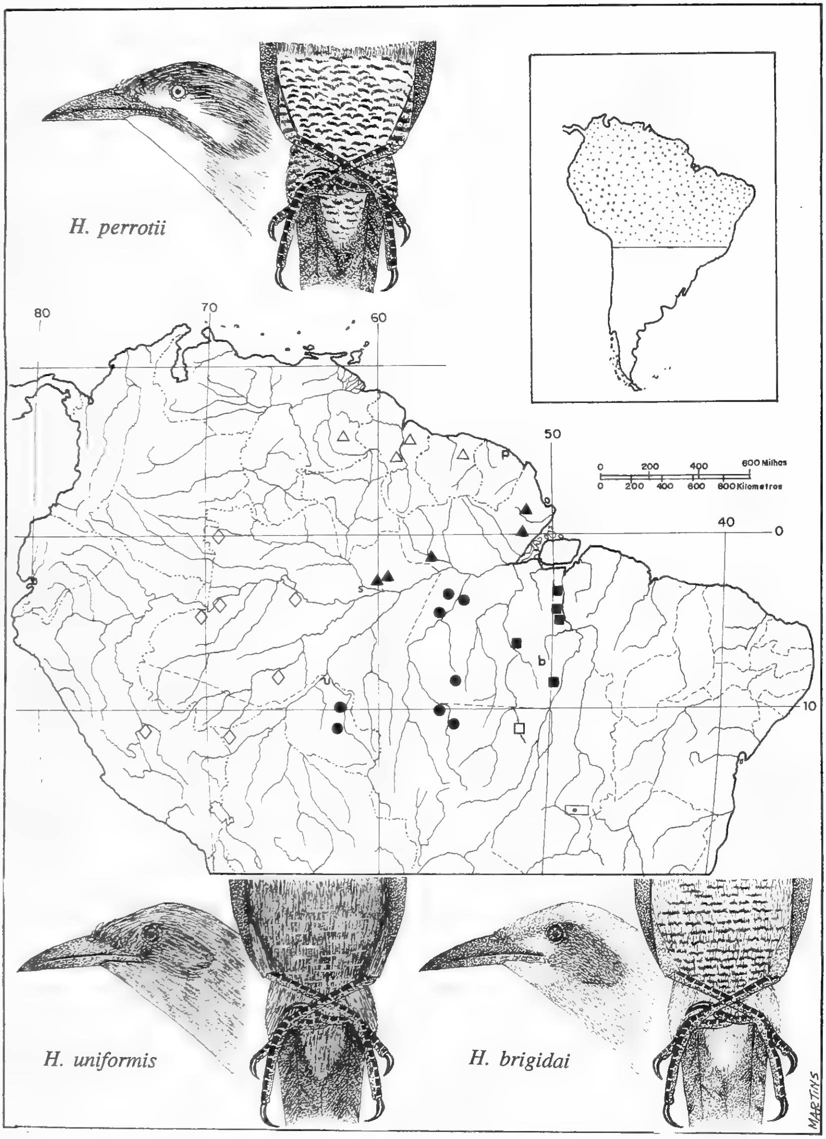

Figure 1. Distribution of the four species of *Hylexetastes* in South America, with sketches of *H. perrotii*, *H. brigidai* and *H. uniformis*. Triangles, *H. perrotii*; squares, *H. brigidai*; circles, *H. uniformis*; rhombuses, *H. stresemanni*. Closed symbols indicate localities of specimens examined, open symbols records from the literature. Type localities are indicated as follows: p, *H. perrotii*; b, *H. brigidai*; u, *H. uniformis*; s, *H. stresemanni*.

Description. Crown and mantle near Cinnamon-Brown (33; capitalized colour names and numbers are from Smithe 1974, 1981). Lores Pale Neutral Gray (86), auriculars and malar region Brownish Olive (29). Chin and throat whitish washed with Yellow Ocher (123C). Breast near Dark Drab (119B) and belly Buff (124) barred with Clay Color (26). Flanks near Dark Drab. Rump and upper tail-coverts Amber (36). Upperside of tail Maroon (31) with underside lighter. Wing outer margins Chestnut (32) with apical portion darker. Under wing-coverts near Tawny (38) barred with dusky. Carpal margins Grayish Olive barred with dusky. Iris cinnamon-brown, bill brown, tarsus greenish. Measurements: total culmen 39.5 mm; wing ('flat') 128.0 mm; tail 103.5 mm, tarsus 30.0 mm. Habitat: Tall *terra firme* forest.

Distribution. H. brigidai is known only from the region between the Xingu and Tocantins-Araguaia Rivers, in the Brazilian states of Pará and Mato Grosso (Fig. 1).

Etymology. It is a great pleasure to name this taxon for the person who collected the holotype, Manoel Santa Brígida. Mr. Santa Brígida worked as senior taxidermist in the section of Ornithology of the Museu Paraense Emílio Goeldi in the last two decades. During this time, he contributed tirelessly to the expansion of Museu Goeldi's bird collections and, consequently, to our knowledge of the systematics and distribution of Amazonian birds.

Variation. All ten specimens of *H. brigidai* examined have chin and throat washed with Yellow Ocher, carpal region and under coverts of wing crossed with dusky bars, and lores of Pale Neutral Gray. All specimens have belly barred, but one of them (MPEG 37992, Reserva da Companhia Vale do Rio Doce, rio Sororó) has the bars in the belly so weakly marked that it resembles the pattern exhibited by *H. uniformis*. An immature individual (skull 50% pneumatized) collected in Santana do Araguaia (MPEG 48669) has iris dark grey, maxilla black, mandible brownish-black and tarsus greenish-brown. Soft colour parts recorded for adult individuals of *H. brigidai* are as follows (number of individuals in parenthesis): (a) iris red (6) or brown (2); bill mainly dark red (7) or brown (1); and tarsus greenish-brown (3), greenish-grey (2) and dark green (2).

Material examined. H. brigidai: **PARÁ**: Marabá, Reserva da Companhia Vale do Rio Doce, rio Sororó (1♂, 1♀); Santana do Araguaia, Fazenda Barra das Princesas (1♀, 2♂); rio Tocantins, 12 km S Jacundá (1♂); Tucuruí, vale do rio Caraipé (1♂); Rodovia Transamazônica between Marabá and Altamira, km 12 (1♂); São Félix do Xingu, Gorotire (1♂); Serra dos Carajás, Serra Norte, Distrito do Manganês (1♂, Holotype). *H. perrotii*. **AMAPÁ**: rio Maracá, Prosperidade, Cachoeira Pancada (1♂, 1♀); rio Iratapuru, igarapé Novo (1♀); Macapá, rio Amapari (1♀). **PARÁ**: rio Trombetas, Cruz Alta (1♂, 1♀). **AMAZONAS**: Manaus, Reserva Ducke (1♂); BR-174, 137 km N of Manaus (1♂); rio Uatumã, 5 km S rio Pitanga (1♀). *H. uniformis*. **PARÁ**: Rio Tapacurazinho, km 25 Transamazônica (1♂, 1♀); Rodovia Santarém-Cuiabá, km 84 (1♂); Santarém, Floresta Nacional do Tapajós (1♀); Parque Nacional da Amazônia (1♂, 1?). **RONDÔNIA**: rio Jiparaná, cachoeira Nazaré, west bank of rio Jiparaná (3♀); Ouro Preto do Oeste (1♂); Jiparanã, sítio Novo Tupassi (1♂). **MATO GROSSO**:

TABLE 1
Measurements of the three species of *Hylexetastes*

	H. perrotii (*n*=9)		*H. brigidai* (*n*=9)		*H. uniformis* (*n*=11)	
	mean (s.d.)	range	mean (s.d.)	range	mean (s.d.)	range
Total culmen	42.8 (1.8)	40.9–45.5	40.8 (1.1)	39.5–43.1	40.6 (3.6)	35.0–49.8
Wing ('flat')	131.3 (5.5)	124.0–142.0	126.5 (2.9)	122.0–131.0	123.3 (3.4)	118.0–131.0
Tail	110.5 (4.8)	100.0–116.0	107.4 (7.2)	95.8–120.5	100.0 (6.2)	90.0–109.5
Tarsus	32.3 (1.8)	28.5–34.0	31.8 (3.2)	29.1–39.9	30.5 (1.2)	28.6–33.0

Alta Floresta, rio Cristalino, 15 km above the river Teles Pires (1♂); rio Peixoto de Azevedo (1♂).

Remarks. On average, *H. uniformis* and *H. brigidai* are smaller than *H. perrotii*. However, the measurements of these three taxa show considerable overlap (Table 1), which makes it difficult to distinguish individuals of each taxon based only on morphometric data. Our data (Table 1) did not support either the observation by Cory & Hellmayr (1925) that measurements of the wing and tail of *H. perrotii* and *H. uniformis* do not overlap, or the suggestion by Ridgely & Tudor (1994) that short bill size could be used as a diagnostic character for *H. uniformis*.

According to the labels, *H. brigidai* was collected in the understorey of: (a) *terra firme* forest, (b) transition between *terra firme* forest and second-growth forest, and (c) tall second-growth forest. JMCS observed two individuals of *H. brigidai* following army ants swarms (*Eciton burchelli*) in the interior of tall *terra firme* forest at the type locality. This behaviour is similar to that recorded for *H. perrotii* by Willis (1982). Ridgely & Tudor (1994) commented that they have never seen *H. uniformis* at an army ant swarm. However, JMCS observed *H. uniformis* at swarms of *E. burchelli* on two occasions near Santarém in October 1984: one in the interior of a *terra firme* forest at Floresta Nacional do Tapajós (2°50′S, 54°55′W), and another in a tall second-growth forest at Urumari (2°28′S, 54°43′W). Notes on the song of *H. brigidai* heard by JMCS at the type-locality agree well with the described songs of *H. perrotii* (Willis 1982) and *H. uniformis* (Ridgely & Tudor 1994); but detailed analyses would be needed to verify if the songs of these three species are indeed similar.

Discussion

Based on similarities in plumage, *H. perrotii, H. brigidai* and *H. uniformis* could be considered as a monophyletic group, whose sister-taxon is *H. stresemanni*, from western Amazonia (Fig. 1). However, if strict cladistic procedures are applied, no unambiguous set of relationships among these four species can be recovered through analysis of plumage characters. In this case, molecular studies are required to assess the phylogenetic relationships within the genus.

The ranges of species of the genus *Hylexetastes* constitute one more case of parapatric distribution of closely related Amazonian birds, whose ranges are delimited by some of the major rivers of the Amazon drainage (Fig. 1). Different from some species discussed by Haffer (1992), the species of *Hylexetastes* do not show any evidence of hybridization in the headwaters of the rivers that separate their ranges (Fig. 1). This strongly supports the recognition of the diagnosable taxa of this genus as distinct biological or phylogenetic species (Hellmayr 1910, Ridgely & Tudor 1994) rather than as subspecies of a single polytypic and widespread species (Cory & Hellmayr 1925, Pinto 1938, 1978, Peters 1951). We predict that genetic distances between species of *Hylexetastes* will be at least as high as those reported for other well-marked Amazonian forest species (Caparella 1988, 1991, Hackett & Rosenberg 1990, Hackett 1993).

Rivers seem to be an effective barrier for species of *Hylexetastes*, which are usually restricted to the understorey of Amazonian *terra firme* forests and have very low population densities (Willis 1982). The simplest hypothesis to explain the pattern of distribution and differentiation in *Hylexetastes* is that based on the river theory (Snethlage 1910, Sick 1967). This model holds that some species of Amazonian forest birds have evolved by the fragmentation of the range of a common ancestor by the development of the modern drainage system in the Amazon basin during the Late Tertiary (Petri & Fúlfaro 1983). Haffer (1992) has pointed out the following problems with the river theory: (a) the problem of speciation in strong-flying canopy birds that readily cross broad rivers; (b) the differentiation of species which inhabit river-created vegetation zones along floodplains and river banks; (c) the dynamics of some Amazonian rivers with frequent transfer of extensive portions of land between opposite margins; (d) the conspicuously reduced barrier effect of large rivers during periods of lowered sea-level of the Pleistocene; (e) the occurrence of numerous secondary contact zones between Amazonian birds in interfluvial regions and therefore unrelated to large rivers.

Before discussing these points, we must stress that the river theory, as we understand it, is not a model than can be applied to all Amazonian birds. Rather, its application is limited to those birds (a) restricted to forest understorey and (b) with low dispersal capability (Snethlage 1910, Sick 1967). In this aspect, it is similar to the refuge model, which only can be applied to species with rigid ecological fidelity (Vanzolini 1981). Clearly, speciation of strong-flying canopy species and of species associated with river-created vegetation zones cannot be explained by the river theory. The frequent transfer of extensive parcels of land from one side to another is an important characteristic mainly of the white-water rivers in Upper Amazonia (e.g. Juruá, Purús; see Sioli 1984), which usually are not considered as important barriers by proponents of the river theory. To consider that some of the major rivers in Amazonia had their barrier effects reduced during the periods of lowered sea-level during the Quaternary, it is also neessary to have much more paleoecological data than is currently available. Mainly, it is necessary to show that tall humid forests rather than another type of vegetation occupied the terrain left by the reduction of the water-level of these rivers. Finally, we tallied all secondary-contact zones of Amazonian birds listed by Haffer (1974: 95) that are not associated with present-day ecological barriers (e.g. savannas in Roraima, white-sand campinas in the lower Rio Negro, transition from Amazonia to the *cerrado* region) or presence of rivers. They included only 6 (24%) of 25 cases listed by Haffer (1974). All of them (*Pionopsitta, Pteroglossus, Ramphastos, Xipholena, Phoenicircus* and *Psarocolius*) are canopy rather than understorey birds. Obviously, these cases could never be explained by the river theory and another biogeographical model will be required. In summary, Haffer's arguments did not reject the river theory as a simple and parsimonious model for explaining the current patterns of differentiation and distribution in forest understorey birds.

The diversification in Amazonian birds is indeed a complex subject, with no simple or single explanation. We have to know much more about the geographical distribution, ecological requirements and phylogenetic relationships of the products of the diversification process, i.e. species, in order to evaluate properly the different hypotheses proposed so far. To continue arguing for or against the importance of one model (refuge theory) over another (river theory) without this additional critical information promises to shed little new light on biogeographical problems in Amazonia.

Acknowledgements

Our studies are supported by the Brazilian Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Brasília, Brazil. Research in Serra dos Carajás was supported by the Companhia Vale do Rio Doce (CVRD). JMCS received support from the Danish Natural Science Research Council (Grant J. nr. 4964-93). We thank Dr H. A. Camargo for information about H. Fry's specimen housed at the Museu de Zoologia, Universidade do São Paulo, Dr D. W. Snow for critical review of the first draft of the manuscript, and Mr A. S. Martins for drawing Figure 1.

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The turtle doves of Bird Island, Seychelles

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Received 22 November 1994

The granitic islands of the Seychelles had an endemic subspecies of turtle dove *Streptopelia picturata rostrata*, characterised by a general dull reddish-brown plumage (Goodwin 1970). On the main granitic islands and on most of the smaller ones, the Seychelles subspecies has been replaced by the nominate form *S. p. picturata* from Madagascar, which was introduced to the Seychelles, possibly around 1850 (Lever 1987); this bird is paler and has a grey head. The replacement of the endemic by the introduced form is considered to have resulted largely through hybridisation (Penny 1979). However, on two small islands (Cousin, Cousine, both free of introduced predators) birds showing characteristics of the Seychelles form persist, together with some individuals showing intermediate characters (Diamond 1984). These same islands have retained populations of several other endemic species that have become extinct on islands with large populations of introduced predators. The short-winged *rostrata* (Benson 1967) may have been more vulnerable to introduced predators than the longer-winged *picturata*, and both predation and hybridisation may have contributed to the extinction of the former.

Turtle doves showing the characteristics of *rostrata* are also present on Bird Island, a coralline cay which is somewhat isolated from the granitic islands, being 80 km north of the nearest large island, Silhouette, and a similar distance from Cousin, the nearest island with birds of *rostrata* type. The origin of the Bird Island birds is particularly interesting because turtle doves have only recently become abundant there.

The British Natural History Museum has a specimen, labelled *S. p. rostrata* (the specimen is aberrant in having white markings on the primaries and greater coverts), collected on Bird Island in 1946. In the early 1970s turtle doves were not recorded on Bird Island but an unidentified dove was seen in a *Phyllanthus casticum* tree in the centre of the island on 30 October 1973 (Feare 1979). This bird was described as red-brown, without grey on the head and rump, but buff on the lower belly and under tail coverts: the bill was red-brown. Turtle doves were not recorded by Verschuren (1986) during a one week visit to Bird Island in March 1984.

Since the 1970s, the vegetation in the centre of Bird Island has been allowed to regenerate to form a dense woodland. Turtle doves are now common in this vegetation and in *Thespesia* woodland and *Scaevola* bush along the east coast, but are seen most frequently on the small rubbish tip and around the farm (a small development rearing pigs and poultry and growing a few vegetables). All birds seen during visits in February 1992, August 1993 and June-July 1994 were generally reddish-brown, resembling the Seychelles' endemic subspecies. In view of the abundance of the Madagascar *S. p. picturata* in the Seychelles and the relative scarcity of birds resembling *S. p. rostrata*, recent colonisation of Bird Island by the latter would seem unlikely. To obtain a clearer picture of the identity of the Bird Island birds, on 14 July we caught eight individuals in mist nets set at the rubbish tip. They were weighed using a Pesola balance and the wing (flattened chord), exposed culmen and tarsus were measured. In addition, their plumage and unfeathered parts were described in detail for later comparison with specimens in the British Museum sub-department of Ornithology and each bird was photographed for later reference.

Description of the Bird Island turtle doves

Table 1 gives the weights and measurements of the eight birds that were caught, together with details of mandible, eye and rump colour (see below). The basic description was:

Crown, sides of head and chin dull maroon (but head of bird 8 glossy black); feathers on sides of neck blackish, broadly tipped with full maroon (giving the appearance of black spots on the sides of the neck); breast warm dull maroon extending to the upper belly down to about the thighs (in bird 8 the upper breast was glossy black, like the head, while the lower breast was dark maroon, almost black); lower belly pale dusky pink, vent whitish shading into pale pinky-buff under tail coverts; flanks warm maroon shading into dark charcoal towards sides of vent. Marginal coverts and lesser coverts, together with mantle and lower neck rich bronzy maroon; rump dark charcoal (birds 3 and 5), dark charcoal with feathers tipped dark chocolate brown (birds 1, 7 and 8), or rump entirely dark chocolate brown (birds 2, 4 and 6). Primaries, secondaries and their coverts dark

TABLE 1

The weights, wing (flattened chord), bill (exposed culmen) and tarsus lengths, lower mandible colour (a=all dusky pink; g=dusky pink on gape only, rest steel-blue), iris colour (outer>inner) and rump colour (c=charcoal, b=chocolate-brown, ctb=charcoal, feathers tipped brown) of 8 adult turtle doves caught on Bird Island, July 1994

Bird	Weight	Wing	Bill	Tarsus	Lower mandible	Iris	Rump
1	171	170	22	29	a	red>orange	ctb
2	188	161	20	29	g	brown-orange>ochre	b
3	175	162	21	30	a	red>orange	c
4	160	163	19	28	g	brown-orange>ochre	b
5	163	171	20	29	a	red-orange>orange-yellow	c
6	—	167	18	27	g	brown>yellow-ochre	b
7	172	160	18	27	g>a	orange-brown>orange-ochre	ctb
8	175	175	20	33	a	orange>pale ochre	ctb

Notes: bird 6 was not weighed; the gular region of the lower mandible of bird 7 had a pinkish blush below the dusky pink gape.

chocolate brown (bleached paler in old worn feathers); underwing dark chocolate brown, tinged grey, but with forward under wing coverts bronzy maroon, especially in bird 8; central rectrices dark chocolate brown, inner webs of other rectrices becoming paler for distal quarter progressively towards outer rectrix on which this area is dirty white, with some paling of the inner webs of rectrices 3 to 6; distal portions of all rectrices dirty white below, forming a terminal band *c.* 3.5 cm wide. Bill with distal third pale steely blue, sometimes with tip (hook) ivory; proximal two-thirds, including cere, deep dusky pink on upper and lower mandibles in birds 1, 3, 5 and 8; in birds 2, 4 and 6 proximal part of lower mandible pale steely blue but with deep dusky pink gape, while in bird 7 proximal part of lower mandible mainly pale steely blue but with deep dusky pink on gape and as a stripe below gape. Anterior of legs and upper toes deep dusky pink, posterior of legs pale steely blue. Circumorbital skin, together with small triangles in front of and behind eye naked and deep dusky pink to maroon. Iris shaded from brighter round the outside to paler towards the pupil (Table 1), birds 1, 3, 5 and 8 brighter and redder than the others.

We did not catch any immature birds, but two individuals seen at the rubbish tip were duller brown, lacking maroon, with the bill also red-brown.

Main characteristics of Madagascar and Seychelles races

Thirty-eight specimens of nominate *picturata* in the British Museum collection from Madagascar were characterised by a slaty grey crown and nape, paler grey cheeks and almost white chin. The display feathers on the side of the neck were black, tipped greyish-pink. The mantle was maroon, the breast dusky pink and belly buffish, shading into white under tail coverts. The wing-lengths of 11 male and 12 females, measured when fresh and recorded on the labels, averaged 170.3 mm (range 159–176, standard error 1.3) and 178.2 mm (range 171–187, s.e. 1.7) respectively. (The wings of these same birds were measured from the skins, and averaged 165.5 mm (155–170, s.e. 1.2) for the females and 171.6 mm (165–180, s.e. 1.2) for the males. This indicates that

TABLE 2
The ratio bill depth/length (exposed culmen) of adult *Streptopelia picturata* from Madagascar (nominate *picturata*) and Seychelles (*rostrata*) specimens in the British Museum, and of doves caught on Bird Island, Seychelles, in July 1994

Locality	Ratio bill depth/length	*n*	Range	Standard error
Madagascar	0.27	23	0.21–0.30	0.01
Seychelles	0.32	9	0.28–0.35	0.01
Bird Island	0.32	8	0.28–0.38	0.01

during and/or after skin preparation, the wings of the preserved specimens had lost over 5 mm compared with the fresh measurements.)

Nine specimens labelled *S. p. rostrata* from the Seychelles had the head, including cheeks and chin, dark chocolate brown, most tinged maroon but some tinged purple. The tips of the display feathers on the sides of the neck were generally blue-grey. The belly, usually down to the thighs, was reddish-brown; behind the thighs this shaded into buffish on the under tail coverts. The wings of 8 of the preserved specimens (in the ninth the primaries were excessively abraded) averaged 148.9 mm (range 146–155, s.e. 1.0).

During examination of the museum specimens, the bills of *rostrata* appeared deeper in relation to their length than those of *picturata*, a feature noted by Newton (1867). Bill depth had not been measured on the birds caught on Bird Island, but the photographs allowed measurement of depth and length (exposed culmen) from which the ratio depth/length could be calculated. The same ratio was obtained from the adult museum specimens whose bills were intact (Table 2).

Identity and origin of the Bird Island turtle doves

On the basis of plumage colour, short wing-length and large bill depth/length ratio, the adult turtle doves caught on Bird Island in July 1994 conform more closely to *S. p. rostrata* than to nominate *picturata*. Differences from specimens of *rostrata* in the British Museum relate to maroon, rather than bluish, tips to the black display feathers on the side of the neck and perhaps to a somewhat longer wing in the Bird Island doves, although comparison of wing lengths between fresh and preserved specimens is difficult in these birds.

Most of the British Museum specimens of *rostrata* were collected in the late 1880s, after the introduction of *picturata* into Seychelles (Newton 1867, Oustalet 1878, Benson 1967). There is thus no certainty that these specimens are of pure *rostrata* but they are clearly very different from *picturata* from Madagascar and from the birds that inhabit the larger granitic islands today. The resemblance of the Bird Island doves to *rostrata*, rather than to birds now living on most of the granitic islands, raises questions about the origin of the Bird Island birds.

Although a vinous-headed form, *S. p. saturata*, may still exist in the Amirantes (Benson 1970), it is unlikely that this form would have reached Bird Island. It also seems unlikely that Bird Island should have been recently colonised by birds from Cousin and Cousine Islands, which have comparatively small populations of birds that show characteristics of *rostrata*, and much smaller populations of turtle doves than Mahe, Silhouette, Praslin and La Digue. The presence of *rostrata*-type doves on Bird Island in 1946 (BM specimen) and 1973 (Feare 1979) suggests that they may have been present in small numbers for many years, possibly restricted to dense shrub where they may have been overlooked. In this case, Bird Island colonists could have come from the granitic islands when the latter were still predominantly inhabited by *rostrata*. Such colonisation is unlikely to have occurred before coconuts were planted (probably with associated plantation weeds) on Bird Island in the latter half of the last century, because prior to that time the island was a huge seabird colony with little vegetation (Fryer 1910). Turtle doves might have arrived of their own accord or they could have been taken there by plantation workers as a food source (although Bird Island seabirds must have provided plentiful food). If the present population is indeed derived from birds which colonised the island over a century ago, Bird Island may support stock closer genetically to *rostrata* than vinous-headed forms surviving on other islands, all of which are nearer to islands where *picturata* occurs and thus more likely to have been diluted by that stock.

Acknowledgements

These observations were made during a visit to Seychelles supported by the Royal Society, the Seabird Group, Air Seychelles, Bird Island Lodge and the Division of the Environment of the Seychelles Government. We are especially grateful to Georges and Margaret Norah and Guy and Marie-France Savy for their hospitality on Bird Island. Specimens in the Natural History Museum, Tring, were examined with the kind permission of Dr Robert Prys-Jones.

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An annotated list of the birds of the Cerro Tamacuarí region, Serranía de Tapirapecó, Federal Territory of Amazonas, Venezuela

by George F. Barrowclough, Patricia Escalante-Pliego, Ramón Aveledo-Hostos & Luis A. Pérez-Chinchilla

Received 22 November 1994

The avifaunas of the major tablelands, or tepuis, of southern and eastern Venezuela and adjacent areas of Brazil and the Guianas are fairly well known. The history of collecting and aspects of the biogeography of these areas have been reviewed by Mayr & Phelps (1967). Nevertheless, smaller tepuis, ranges, and isolated remnants of the Guiana shield exist that have not received adequate attention due to their isolation, steepness, and restricted size (Dickerman & Phelps 1982, Barrowclough & Escalante-Pliego 1990). Some of these may ultimately prove of considerable interest in studies of biogeography because they may act as 'stepping-stones' between major tepuis; they may also be informative concerning species–area relationships.

During the winters of 1988 and 1989, the Fundación para el Desarrollo de las Ciencias Físicas, Matemáticas y Naturales (FUDECI) of Venezuela organized a series of two short expeditions to the areas of extreme southern Venezuela drained by the Mavaca and Siapa rivers. As part of those expeditions, members of the Ornithology Department of the American Museum of Natural History and of the Colección Ornitológica Phelps observed and collected birds for the periods 26-27 March 1988 and 21-25 January and 12-17 March 1989 in the vicinity of a camp at 1270 m on a ridge just north of Cerro Tamacuarí in the Serranía de Tapirapecó (1°13′N, 64°42′W). This range of eroded mountains comprises part of the border between Venezuela and Brazil and, prior to this expedition, had not been sampled by ornithologists. These areas in southern Amazonas remain quite remote from airfields, nor are they easily reached by river; our work and the length of our stay were dependent on the availability of helicopter support provided by the Venezuelan air force. These mountains were found to possess an avifauna that is more or less typical of the tepuis of southern and eastern Venezuela; consequently our observations provide new information concerning the distribution and biogeography of the biota of the pantepui. Some general details of the expedition have been reported elsewhere (de Bellard-Pietri 1989); here we present the ornithological results of the work at this locality.

The habitat at the Tamacuarí site consisted largely of relatively tall, moist forest in ravines and north-facing slopes with some open patches of grass with shrubs and bromeliads on ridges. Permanent streams (with small fish) were present in the ravines. Specimens were obtained using mistnets and shotguns between approximately 1100 and 1400 m. Cerro Tamacuarí, itself, is an exposed volcanic neck that reaches

2340 m, but is shear and without vegetation above approximately 1400 m.

Following is a list of birds seen or collected during our stay. The specimens are deposited in the collections of the American Museum of Natural History, New York, the Colección Ornitológica Phelps, Caracas, and the Museo de Biología, Universidad Central de Venezuela, Caracas. Our descriptions of gonad sizes follow the guidelines used by Willard *et al.* (1991). Specimens preserved in formalin were not sexed and so are not reported with regard to gonadal condition. An asterisk designates species considered primarily montane by most authors (e.g. Mayr & Phelps 1967, Meyer de Schauensee & Phelps 1978, Dickerman & Phelps 1982, Ridgely & Tudor 1989, 1994, Willard *et al.* 1991). The closest major tepuis to Cerro Tamacuarí are Cerro de la Neblina 150 km to the southwest and Duida 250 km to the northwest; in our species accounts, we compare our collections to the known avifaunas of those two tepuis as Tamacuarí provides a potential island of suitable habitat between those well known, much larger, localities. The stated presence or absence of a species at Duida or Neblina is based on the summaries of Chapman (1931), Phelps & Phelps (1958, 1963), and Willard *et al.* (1991).

Distribution

Of the approximately 100 upper elevation pantepui species of birds (Willard *et al.* 1991), only 29 were found at Tapirapecó during our short stay. However, as documented by Dickerman & Phelps (1982), because of complementary and restricted distributions, only a subset of these taxa are likely at any one tepui. A reasonable expected avifauna for southern Amazonas might be the 62 species known from Neblina. A series of broken ranges extend north and east from Cerro de la Neblina; the Serranía de Tapirapecó is one of these. It seems probable that at various times during the Pleistocene, vegetation levels were lower than at present and continuous subtropical habitat may have been extensive and connected these ranges. Consequently, a common avifauna may have been present throughout the highlands of southern Amazonas. Now, however, there is not continuous habitat connecting these ranges with each other and with Neblina; just west of our camp was a wide gulf a thousand metres deep between Tamacuarí and the adjacent mountains of the range. Thus, at present the habitat forms a 'stepping-stone' pattern of habitat patches, and birds that are reluctant to fly across several kilometres of unsuitable habitat must have relatively small, isolated populations on these ranges. For example, it seems unlikely that a montane antpitta such as *Myrmothera simplex* would disperse across such a gulf, whereas a montane pigeon like *Columba fasciata* might well do so. Consequently, some taxa that are widespread in the pantepui might not be present at Tamacuarí due to extinction, facilitated by small population sizes in the limited habitat, combined with a lack of sufficient dispersal capability to reoccupy the range. For other taxa, such as *Zonotrichia capensis*, there appears to be insufficient open habitat. Finally, although the documentation of species occurrences for these smaller tepuis is quite important, our sampling, with only 163 specimens and a few additional sight records, is too limited to draw conclusions about numbers of species. If anything, our results raise doubts about the adequacy of sampling at even the best known tepuis.

One upper elevation species collected at Tamacuarí, *Chlorophonia cyanea*, is known from Duida but not Neblina. The absence of this species from the latter, in spite of its presence at Tamacuarí, would be surprising; but the lack of any record may simply reflect a continuing absence of adequate work at mid-elevations at Neblina. An additional six species collected at Tamacuarí are known from Neblina but not Duida. Some of these may actually be absent from that tepui; for example, *Rupicola* seems generally not to be present north of the Orinoco. Over a thousand specimens are available from Duida: the collecting there has not been limited. Nevertheless, mistnets were not used in early expeditions to the tepuis; further fieldwork is indicated before analyses such as that of Cook (1974) can be assumed to be free of a substantial component of sampling error.

Annual cycle

For males, most species of permanent residents were noted to have moderate or large testes. However, in the Neotropics, it is not unusual for males to be in breeding condition through much of the year (Foster 1975); female data may be more informative. For those resident species for which we had female specimens, 15 of 21 (71%) species had moderate to large ova and ovaries. At Cerro de la Neblina, Willard *et al.* (1991) reported large gonads in females of many species from November through mid-February, followed by a rapid reduction in breeding status in late February and March. Our data are generally consistent with that pattern.

Specimens of 14 of 31 (45%) permanent resident species were noted to have wing or tail moult. For Cerro de la Neblina, Willard *et al.* (1991) noted a pattern in montane species that included a peak of wing/tail moult in November and December followed by a decline in frequency until it reached zero in May.

Our field work in March occurred at the very beginning of the rainy season, following the November to March relatively dry season. As with the results from Neblina, our data are consistent with a pattern of breeding occurring during this dry season, overlapping with (e.g. Foster 1975) or followed by moult before or at the beginning of the wet season. This generalization does not, of course, necessarily apply to every species; many more data and temporal sampling are needed to investigate such patterns.

Species accounts

LITTLE CHACHALACA *Ortalis motmot*

This species was heard calling daily at dawn on brushy hillsides near camp. One male specimen was taken; it had large testes and was in wing and body moult. This species occurs over a wide elevational and geographical range in Amazonia; but has not been noted at either Duida or Neblina.

***BAND-TAILED PIGEON** *Columba fasciata*

This species was commonly seen as single birds and in small flocks. One male specimen had large testes and was in light body moult. The species has a wide distribution in North, Central, and South America, and is known from both Neblina and Duida.

WHITE-COLLARD SWIFT *Streptoprocne zonaris*

This species was commonly seen in flocks of dozens of birds.

***TEPUI SWIFT** *Cypseloides phelpsi*

This tepui endemic was commonly seen, sometimes in mixed flocks with *Streptoprocne*. It is known from both Duida and Neblina.

***BLUE-FRONTED LANCEBILL** *Doryfera johannae*

A single male specimen was collected; it had small testes and was in light body moult. The species is widespread throughout the pantepui, is known from Neblina and Duida, and also occurs in the Andes; it is usually found at lower elevations than this (e.g. Willard *et al*. 1990).

***GREY-CHINNED HERMIT** *Phaethornis griseogularis*

A single female, with a large ovary, was collected. In the pantepui, this species apparently is only known from Neblina and Roraima; it also occurs in the central and northern Andes.

***SPARKLING VIOLETEAR** *Colibri coruscans*

One female specimen with a small ovary and in wing moult was collected. It is known from the better sampled tepuis, including Neblina and Duida; elsewhere it occurs in the Andes from Colombia to Argentina.

***BUFF-BREASTED SABREWING** *Campylopterus duidae*

This species was abundant; it is endemic to the pantepui and is found on most tepuis west of the Río Caroní, including Duida and Neblina. Of five male specimens examined, all had large testes; three of four female specimens had enlarged ovaries. Half of the specimens were in wing or tail moult.

WHITE-NECKED JACOBIN *Florisuga mellivora*

Two specimens were collected: a male with moderately enlarged testes and a female with enlarged ovary; neither of these was in moult. This species has a wide elevational and geographical range.

***GREEN-BILLED HUMMINGBIRD** *Amazilia viridigaster*

This species was common at Tamacuarí. Three male specimens all had small testes; two females had moderately enlarged ovaries. Three of the five birds were in wing moult, one was in body moult. The birds from this population have been described as an endemic subspecies, *A. v. laireti*, by Phelps & Aveledo-Hostos (1988). The species occurs at tropical and subtropical elevations patchily in the pantepui, including Duida and Neblina, and in the northern Andes.

***VELVET-BROWED BRILLIANT** *Heliodoxa xanthogonys*

This widespread pantepui endemic was found to be common. It is known from Neblina and Duida. Three of four male specimens had enlarged testes; a single female specimen had a large ovary. Two specimens were in light body moult.

***MASKED TROGON** *Trogon personatus*

This species was found in moist forest in ravines; it is widespread in the pantepui and Andes and occurs at Neblina and Duida. Two male specimens had small testes; one was in body and one in wing moult.

BLACK-SPOTTED BARBET *Capito niger*

This species has a wide elevational range. Three specimens were collected; two males had large or moderate-sized testes, respectively; a female had a small ovary. None was in moult, but all had fresh plumage.

***CHESTNUT-TIPPED TOUCANET** *Aulacorhynchus derbianus*

This species was seen occasionally. It is known from Neblina, Duida, and most other tepuis; it is also present on the eastern slopes of the Andes. Specimens of both sexes had small gonads; none was in moult, but all were in fresh plumage.

***GOLDEN-OLIVE WOODPECKER** *Piculus rubiginosus*

This species is widespread in the pantepui; it occurs on both Cerros Duida and Neblina. We treat it as a montane species, but it occurs at sea level in parts of its range outside the pantepui. Two female specimens were collected, both with enlarged ovaries; neither was in moult.

WEDGE-BILLED WOODCREEPER *Glyphorynchus spirurus*

A single female, with yolking egg and no moult, was taken in a net in dense forest; it was our only record of this lowland species.

***DUSKY SPINETAIL** *Synallaxis macconnelli*

Following Vaurie (1980) and Ridgely & Tudor (1994), we treat the tepui birds as a separate species. The same taxon apparently also occurs at low elevations in the Guianas. The species has a patchy geographical distribution in the pantepui: a single specimen is known from Cerro de la Neblina, and the bird is unknown from Duida. We commonly heard these birds in brushy thickets. Three male specimens had moderate to large testes; one had wing moult, one body moult, and one had no moult.

***PLAIN ANTVIREO** *Dysithamnus mentalis*

Two specimens were taken; one female had a small ovary and body moult; an unsexed anatomical specimen had no moult. The species is widespread in the pantepui, known from Neblina but not Duida, and elsewhere occurs from Mexico to Paraguay and Argentina.

***TEPUI ANTPITTA** *Myrmothera simplex*

This species was commonly heard calling in forest. One male specimen had moderately enlarged testes and was in body moult. This is a pantepui endemic and is known from all the major tepuis, including Duida and Neblina. We agree with Ridgely & Tudor (1994) that Tepui Antpitta is a better English name for this species than Brown-breasted Antpitta.

***GUIANAN COCK-OF-THE-ROCK** *Rupicola rupicola*

This lekking species was commonly seen and heard. Two specimens were collected; one male had large testes and no moult; one female had a large ovary and no moult. The species is geographically widespread in the tepuis and Guianas; it occurs at Cerro Neblina, but is not recorded from Duida.

***SIERRAN ELAENIA** *Elaenia pallatangae*

This common species is widespread in the pantepui, including both Neblina and Duida; elsewhere it is found in the Andes south to Bolivia. Four male specimens had moderate to large testes and a single female had a small ovary; two of the specimens were in wing moult and another two were in body moult.

***MCCONNELL'S FLYCATCHER** *Mionectes macconnelli*

Two females were collected; both had large ovaries, neither was in moult. The species is widespread in the pantepui and is known from both Neblina and Duida; elsewhere it is found in the lowlands of the Guianas, northern Brazil, and western Amazonia.

***BLUE AND WHITE SWALLOW** *Notiochelidon cyanoleuca*

This species was seen on several occasions. It is a widespread breeding bird in temperate and sub-tropical regions of South America and is known from all the tepuis; these February birds could be either residents or Austral migrants.

BARN SWALLOW *Hirundo rustica*

A single specimen of this migrant was taken.

***FLUTIST WREN** *Microcerculus ustulatus*

This species commonly was heard in the dense understory of forested ravines; it is a widespread pantepui endemic known from Neblina and Duida. Two males had moderate-sized testes and no moult; one unsexed specimen was in wing moult.

***PALE-EYED THRUSH** *Platycichla leucops*

This species was common. It is known from Neblina but not Duida; elsewhere it is patchily distributed in the pantepui and at subtropical elevations in the Andes. Three males had enlarged testes; none was in moult.

***BLACK-HOODED THRUSH** *Turdus olivater*

This species was common; it occurs at upper elevations throughout the pantepui, including Neblina and Duida, and at scattered localities in the Venezuelan and Colombian Andes. Eight males had moderate to large testes; four females had moderate to large ovaries and one of these had an egg in oviduct. One male was in tail moult; the other specimens were not in moult.

***BLACK-BILLED THRUSH** *Turdus ignobilis*

This thrush was also common; it is known from most tepuis, including Neblina and Duida. We treat it as a montane species, following Willard *et al.* (1990); however, elsewhere in South America it occurs in lowland forest (e.g. Meyer de Schauensee & Phelps 1978, Ridgely & Tudor 1994). Three males and three females had enlarged gonads; two specimens were in tail and body moult, one was in body moult only; the others were in fresh plumage.

BLACKBURNIAN WARBLER *Dendroica fusca*

A single male was our only record of this migrant from North America; it is widespread as a wintering bird at higher elevations in the pantepui and Andes.

AMERICAN REDSTART *Setophaga ruticilla*

This species, also a migrant from North America, was common to abundant in brushy habitat. Three specimens were taken.

***SLATE-THROATED REDSTART** *Myioborus miniatus*

A male, netted in dense forest, had large testes and no moult. The species is widespread at subtropical elevations in the pantepui, including Cerros de la Neblina and Duida; elsewhere it occurs from Mexico to the central Andes.

***TWO-BANDED WARBLER** *Basileuterus bivittatus*

This species was occasionally seen in the understory of tall forest. Geographically, it is widespread at mid-elevations in the pantepui, is known from Neblina and Duida, and also occurs in the Andes of southern Peru, Bolivia, and northern Argentina. One male had small testes; two females had moderately enlarged ovaries. One specimen was in wing and body moult and a second was in body moult only.

***SCALED FLOWER-PIERCER** *Diglossa duidae*

This species was seen on several occasions. A male specimen had large testes and was in body moult. The species is known from most of the western tepuis, including Duida and Neblina.

***SPECKLED TANAGER** *Tangara guttata*

This species was common in taller brush and thickets. It is widespread in the tepuis, occurring at Neblina but not Duida;

elsewhere it occurs in the northern Andes. Two male and three female specimens had moderate-to-large gonads; three additional males had reduced testes. Three specimens were in body moult.

***BLUE-NAPED CHLOROPHONIA** *Chlorophonia cyanea*

This species was common in low canopy and brush. It is widespread in the pantepui, including Cerro Duida, but has not been seen or taken at Neblina; elsewhere it has a wide geographical distribution at subtropical elevations in South America. Four males had moderate to large testes; four females had large ovaries. One female from January was in wing moult; four additional specimens from January were in worn plumage while two from March were in fresh plumage.

***HEPATIC TANAGER** *Piranga flava*

A single male was taken of the resident pantepui form *haemalea*. It had small testes and was in tail moult. The species is known from both Duida and Neblina.

SUMMER TANAGER *Piranga rubra*

A single male was collected of this migrant from North America.

RED-SHOULDERED TANAGER *Tachyphonus phoenicius*

This species was seen in low scrub on several occasions. Two males had moderately enlarged testes; a female had a small ovary; none was in moult.

***TEPUI BRUSH-FINCH** *Atlapetes personatus*

This abundant species is a widespread pantepui endemic, known from Cerro de la Neblina and Duida. Seven male and five female specimens all had enlarged gonads; one female was in tail moult, and a second female in body moult. The population at Tamacuarí belongs to the *duidae* group of subspecies (Barrowclough, unpubl. data.).

Acknowledgements

The authors acknowledge the support of FUDECI and the expedition organizers, leaders, and staff who made this fieldwork possible; Dr. Eugenio de Bellard Pietri, Dr. Antonio Machado Allison, and Pedro Pérez Ramírez were especially important to the success of our work. Partial funding for the expedition was provided by the Phipps Foundation. Our colleagues at Tamacuarí—John Daly, Moe Donnelly, and Chuck Myers—assisted in many ways and helped make our sojourn in camp pleasant and successful. Gilberto Pérez, J. Gregorio Lozano, and J. Aquilino Lozano helped with the field work, and Miguel Lentino assisted with the examination of specimens in the Colección Phelps. John Bates offered useful comments on a draft of this manuscript.

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New or noteworthy records of birds from northwestern Paraná and adjacent areas (Brazil)

by Fernando Costa Straube & Marcos Ricardo Bornschein

Received 26 November 1994

Little ornithological work has been done in northwestern Paraná and adjacent areas with the exception of Sztolcman (1926), Pinto & Camargo (1956), Scherer-Neto (1983), Anjos & Seger (1988), and Straube & Bornschein (1989). Since the 1960s, practically all the natural habitats in this region have been destroyed and there is a striking difference between the original and recent avifaunas. At least ten species have become locally extinct (e.g. *Philydor dimidiatus, Herpsilochmus pileatus, Antilophia galeata, Psarocolius decumanus*) while others, typical of clearings and modified habitats, have spread into the deforested areas along the rio Paraná's banks.

In the last five years we have conducted several studies (Straube 1988, Straube & Bornschein 1989) and expeditions to extreme regions of northwestern and western Paraná and southern Mato Grosso do Sul. All the sites visited were in primary and secondary rainforests, seasonally flooded forests of rio Paraná, marshes, lagoons, scrub, and semi-cleared habitats. The field work was done in the following locations: **Mato Grosso do Sul**, municipality of Bataiporã: Fazenda Pousada da Garça (22°40′S/53°10′W, alt. 250 m), Canal do rio Baía (22°41′S/53°15′W, alt. 230 m), rio Ivinheima (22°45′S/53°20′W, alt. 230 m); mun. of Eldorado: rio Iguatemi (23°55′S/54°10′W, alt. 200 m); **Paraná**, mun. of Centenário do Sul: Fazenda Jangadinha (22°45′S/51°32′W, alt. 350 m), Taparica (22°40′S/51°30′W, alt. 250 m); mun. of Santo Inácio: Ilhas do rio Paranapanema (22°38′S/51°48′W, alt. 250 m); mun. of Porto Rico: Porto Caracu (22°42′S/53°10′W, alt. 300 m), Ilha do Mutum (22°48′S/53°15′W, alt. 230 m), Ilha Porto Rico (22°45′S/53°15′W, alt. 230 m); mun. of Guaíra: Guáira (24°05′S/54°15′W, alt. 250 m); mun. of Altônia: Lagoa Saraiva/Ilha Grande (23°58′S/54°10′W, alt. 230 m), south of Ilha Grande (23°58′S/54°05′W, alt. 230 m); mun. of Loanda: Jardim Urubu (22°53′S/53°10′W, alt. 450 m); mun. of Foz do Iguaçu: Refúgio Biológico de Bela Vista (25°28′S/54°30′W, alt. 250 m); **São Paulo**, mun. of Teodoro Sampaio: Parque Estadual do Morro do Diabo (22°40′S/52°15′W, alt. 300 m); mun. of Pirapozinho: Mato do Mosquito (22°35′S/51°30′W, alt. 300 m). In addition we have included data of some specimens displayed in the Museu Sete Quedas of Guaíra (western Paraná) obtained in the 1960s in Marechal Cândido Rondon (24°32′S/54°02′W, alt. 450 m).

Specimens are referred to by the acronyms MHNCI (Museu de História Natural "Capão da Imbuia", Curitiba, state of Paraná) and MSQ (Museu Sete Quedas, Guaíra). Scientific and common English names follow Meyer de Schauensee (1982). Dates are abbreviated to the form 14 Oct 89, etc.

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*

We collected two specimens in Lagoa Saraiva/Ilha Grande (MHNCI-3133, 14 Oct 89) and Ilha Porto Rico (MHNCI-3712, 21 Feb 91), both flying over the waters of the rio Paraná, with pastures, scrub and secondary forests on its banks. Individuals were also sighted at other places (south of Ilha Grande, Ilha do Mutum, Fazenda Pousada da Garça, Rio Ivinheima and Canal do rio Baíja), sometimes associated with Black Vulture *Coragyps atratus* and Turkey Vulture *Cathartes aura*. This is the first record of the species for the state of Paraná.

BLACK-COLLARED HAWK *Busarellus nigricollis*

One bird was collected in the Ilha Grande (MHNCI-3115, 10 Oct 89) while feeding on an aquatic snail (*Pomacea* sp., fam. Ampullaridae) on the banks of a small temporary lagoon. On other occasions we saw individuals at rio Ivinheima (20 Feb 91) and Canal do rio Baía (22 Feb 91). This is the first specimen record for the south of Brazil of this hawk, which has previously been recorded in Rio Grande do Sul (Belton 1984) and São Paulo (Willis & Oniki 1993).

BARE-FACED CURASSOW *Crax fasciolata*

In rio Ivinheima (20 Feb 91) we found a wing-covert feather, unambiguously assignable to a female of this species. It was discovered in a dense and well preserved forest on the right margin of rio Paraná. Although reported for Paraná until the 1950s, this curassow is probably extinct on the left bank of rio Paraná in the study area (Bornschein & Straube 1991).

SCALED PIGEON *Columba speciosa*

One specimen collected in Marechal Cândido Rondon (MSQ-090, 8 Nov 61) is an additional record of this rare species at the southernmost limit of its distribution.

PEACH-FRONTED PARAKEET *Aratinga aurea*

The single reliable record in southern Brazil is from Pinto & Camargo (1956) (*cf.* Belton 1984). We collected a specimen at Porto Caracu (MHNCI-3759, 24 Feb 91) and saw others at Ilha Porto Rico (21 Feb 91), on both occasions in semi-cleared areas near rio Paraná. It appears to be a local and uncommon species.

ASH-COLOURED CUCKOO *Coccyzus cinereus*

One individual was sighted in a narrow strip of seasonally flooded forest in Rio Ivinheima on 20 Feb 91. This appears to be the first record of the species for the state of Mato Grosso do Sul; its distribution in Brazil is poorly known.

PEARLY-BREASTED CUCKOO *Coccyzus euleri*

An individual of this uncommon Brazilian bird was sighted in a secondary forest at Mato do Mosquito, near rio Paranapanema, on 18 Dec 90. It was previously recorded in northwestern Paraná by Pinto & Camargo (1956) and Straube & Bornschein (1989).

LONG-TAILED POTOO *Nyctibius aethereus*

This rare bird "is known by scattered records, mostly based on skins" (Collar & Andrew 1988). An individual was sighted in Parque Estadual do Morro do Diabo on the edge of primary forest near rio Paranapanema (14 Jul 90, FS). A specimen collected at Marechal Cândido Rondon (MSQ-076, 15 Sep 61), previously cited by Straube & Bornschein (1991), is the only record for the state of Paraná.

OCELLATED POORWILL *Nyctiphrynus ocellatus*

A specimen collected in Marechal Cândido Rondon (MSQ-073, without date), previously reported by Straube & Bornschein (1991), is the single reliable record for southern Brazil (*cf.* Belton 1984).

WHITE-TAILED GOLDENTHROAT *Polytmus guainumbi*

A specimen was collected in Fazenda Pousada da Garça (MHNCI-3787, 20 Feb 91). The species was known south to São Paulo (Pinto 1978) and possibly occurs in Paraná (Grantsau 1988).

LONG-BILLED STARTHROAT *Heliomaster longirostris*

We saw this hummingbird in a small urban park in Guaíra (14 Oct 89); the first record in the south of Brazil.

BLUE-CROWNED MOTMOT *Momotus momota*

One bird was seen in Fazenda Jangadinha (19 Jul 90) in an old secondary forest not far from rio Paranapanema (FS). This is the first record in southern Brazil of this species. It had been previously recorded in southern São Paulo (Willis & Oniki 1981). Additionally we heard various individuals in Parque Estadual do Morro do Diabo (15 Jul 90, FS).

LITTLE WOODPECKER *Veniliornis passerinus*

We collected five specimens, in Paraná at Ilha Grande (MHNCI-3088, 7 Oct 89), Ilha Porto Rico (MHNCI-3630, 3692, 3693, 18–21 Feb 91) and in Mato Grosso do Sul at Rio Ivinheima (MHNCI-3680, 20 Feb 91). These are the southernmost records in Brazil of this species, which had been previously recorded by Pinto & Camargo (1956).

GREATER THORNBILL *Phacellodomus ruber*

This species was recorded in western Rio Grande do Sul near rio Uruguai (Belton 1984). We collected three specimens in Fazenda Pousada da Garça (MHNCI-3658, 19 Feb 91), Canal do rio Baía (MHNCI-3723, 22 Feb 91) and Porto Caracu (MHNCI-3731, 23 Feb 91), where this conspicuous ovenbird is common, especially in seasonally flooded forests near water. These are the first records for Paraná.

GREAT ANTSHRIKE *Taraba major*

A common species on the edges of seasonally flooded forests in the study area. Seven specimens were collected: in Ilha Grande (MHNCI-3094, 3110, 9 Oct 89), Rio Iguatemi (MHNCI-3117, 3118, 19 Dec 90) and Fazenda Pousada da Garça (MHNCI-3646, 3647, 3648, 19 Feb 91). We also saw this species at Taparica (19 Dec 90). Pinto & Camargo (1956) were the first to note the presence of this antshrike in northwestern Paraná.

SLATY ANTSHRIKE *Thamnophilus punctatus*

A male and a female were sighted in Fazenda Jangadinha (19 Jul 90, FS), and a female was collected at the same place (MHNCI-3491, 19 Dec 90). The first record for southern Brazil.

RUSTY-BACKED ANTWREN *Formicivora rufa*

Straube & Bornschein (1989) were the first to note the presence of this species in the region. Recently we collected six specimens in Canal do rio Baía (MHNCI-3720, 3721, 22 Feb 91) and Fazenda Pousada da Garça (MHNCI-3777, 3778, 3779, 3780, 26 Feb 91), both in scrub areas. Although locally common in southern Mato Grosso do Sul, there is no record of this antwren on the left margin of rio Paraná south of the mouth of rio Paranapanema.

RUSTY-FRONTED TODY-FLYCATCHER *Todirostrum latirostre*

An individual was collected at Ilha Grande (MHNCI-3131, 11 Oct 89) in a dense seasonally flooded forest with bamboo near rio Paraná. There is no record of this species south of northwestern São Paulo and it may have been overlooked because of its similarities to the congeneric *T. plumbeiceps*.

COMMON TODY-FLYCATCHER *Todirostrum cinereum*

Sztolcman (1926) was the first to record this species in Paraná. Pinto & Camargo (1956) did not mention its presence in the northwest of the state, although it is very common there. We collected nine specimens: Lagoa Saraiva/Ilha Grande (MHNCI-3138, 8 Oct 89), Taparica (MHNCI-3246, 18 Jul 90; MHNCI-3473 and 3474, 19 Dec 90); Porto Caracu (MHNCI-3706, 3707, 21–25 Feb 91); Ilha Porto Rico (MHNCI-3686, 21 Feb 91); Jardim Urubu (MHNCI-3807, 27 Feb 91). The record of *T. poliocephalum* for northwestern Paraná (Anjos & Seger 1988) is certainly a misidentification, because this species in Paraná is restricted to the lowlands of the Atlantic Forest in Serra do Mar.

RUFOUS CASIORNIS *Casiornis rufa*

This species was known in Brazil south to São Paulo (Traylor 1979). We collected an individual at Fazenda Pousada da Garça (MHNCI-3794, 26 Feb 91) in a secondary seasonally flooded forest. Another specimen (MHNCI-2371) was collected in Paraguay (Limoy, dep. Alto Paraná), suggesting that the species may occur on the Brazilian side of the river in Paraná.

PIED WATER-TYRANT *Fluvicola pica*

P. Scherer-Neto and A. Lara (pers. comm.) saw this flycatcher in the Itaipu hydroelectric reservoir in 1989. Subsequently various individuals were seen at the same place in Refugio Biologico de Bela Vista on 25 Apr 89 (FS). We collected five specimens: Lagoa Saraiva/Ilha Grande (MHNCI-3096, 3099, 8 Oct 89). Ilhas do rio Paranapanema (MHNCI-3461, 18 Dec 90) and Fazenda Pousada da Garça (MHNCI-3740, 3741, 24 Feb 91).

WHITE-THIGHED SWALLOW *Neochelidon tibialis*

A solitary individual was observed among a flock of Blue-and-white Swallows *N. cyanoleuca* flying over the rio Paraná at Guaíra on 14 Oct 89. This is the first record for southern Brazil of this spottily distributed species.

RUSTY-COLLARED SEEDEATER *Sporophila collaris*

Pinto & Camargo (1956), Anjos & Seger (1988) and Straube & Bornschein (1989) have already mentioned that this species occurs in the study area. We collected seven specimens at Fazenda Pousada da Garça (MHNCI-3654, 3789, 3790, 3655, 3656, 3791, 3792, 19-26 Feb 91), and saw individuals at Ilhas do Rio Paranapanema (18 Dec 90).

LINED SEEDEATER *Sporophila lineola*

We collected two specimens at Ilha Porto Rico (MHNCI-3621, 3622, 18 Feb 91), and saw some at Ilha do Mutum (27 Feb 91).

YELLOW-BILLED CARDINAL *Paroaria capitata*

Four individuals were collected: Rio Ivinheima (MHNCI-3673, 3674, 20 Feb 91) and Fazenda Pousada da Garça (MHNCI-3747, 3795, 24, 26 Feb 91). Sight records were made at Ilha Porto Rico (18 Feb 91) and Ilha do Mutum (27 Feb 91). These are the first records for southern Brazil of this very common species in altered habitats and *cerrado* of central Brazil.

ORANGE-HEADED TANAGER *Thlypopsis sordida*

Mentioned by Pinto & Camargo (1956), this is a common bird along the "taquarais" (local name given to any dense groups of bamboo *Guadua spinosissimum*) and seasonally flooded forests of the study area. Six specimens were collected: at Ilha Grande (MHNCI-3123, 12 Oct 89), Ilha Porto Rico (MHNCI-3619, 3620, 3684, 3685, 18–21 Feb 91) and Ilha do Mutum (MHNCI-3800, 27 Feb 91). These are the southernmost localities for the species.

SCREAMING COWBIRD *Molothrus rufoaxillaris*

We saw a juvenile being fed by a Chopi Blackbird *Gnorimopsar chopi* in a pasture at Porto Caracu (24 Feb 91). This cowbird was previously recorded for Paraná by Sick (1985).

CHESTNUT-CAPPED BLACKBIRD *Agelaius ruficapillus*

This species was previously reported by Anjos & Seger (1988) on the right bank of rio Paraná (Mato Grosso do Sul). We sighted a large flock at Ilhas do Rio Paranapanema and collected a specimen (MHNCI-3460, 18 Dec 90). This species is known in scattered marshy areas in Paraná.

UNICOLORED BLACKBIRD *Agelaius cyanopus*

Pinto (1944) mentioned a specimen collected at Rio Paraná, probably in 1940. In the study area it is a common bird in the marshes and wet grasslands. We collected a specimen at Lagoa Saraiva/Ilha Grande (MHNCI-3095, 8 Oct 89) and saw a single individual at Rio Ivinheima (20 Feb 91). In the south of Brazil it is known only in the extreme west of Rio Grande do Sul.

SOLITARY BLACK CACIQUE *Cacicus solitarius*

This is an uncommon resident in the study area. It was sighted at Fazenda Pousada da Garça (26 Feb 91) and collected at Ilha Grande (MHNCI-3140, 10 Oct 89) and Marechal Cândido Rondon (MSQ-045, 13 Apr 60).

GIANT COWBIRD *Scaphidura oryzivora*

This is a very rare bird in Paraná where it was previously recorded by Straube & Bornschein (1989). There is another specimen collected at Guaíra (MSQ-099, 8 Nov 61) which represents an additional record for southern Brazil.

PURPLISH JAY *Cyanocorax cyanomelas*

Scherer-Neto (1983) was the first to note its presence in southern Brazil in the National Park of Sete Quedas. We sighted this jay at Ilha Grande (6 Oct 89).

Acknowledgements

Thanks are due to Dante M. Teixeira, Pedro Scherer-Neto and William L. Isley, Jr. for suggestions on earlier drafts of the manuscript. This work was partially supported by the Conselho Nacional de Desenvolvimento Científico & Tecnológico (CNPq), Instituto Florestal do Paraná, Universidade Estadual de Maringá (NUPELIA) and Prefeitura Municipal de Centenário do Sul.

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On the type specimen, type locality, distribution and clutch size of the Sunbittern *Eurypyga helias* (Pallas 1781)

by Betsy Trent Thomas & Johan Ingels

Received 12 December 1994

During research into the literature on the Sunbittern *Eurypyga helias*, we have encountered several inaccuracies. Perhaps, because of the small volume of information written about this bird, these have been repeated in subsequent papers as factual when they are not. We discuss the origin of the type specimen and the type locality on the basis of the original description, and we offer evidence to correct statements about the distribution and clutch size.

Type specimen

The Sunbittern was described in gothic German and given its original scientific name *Ardea helias* by Petrus Simon Pallas in 1781. This description includes a well-drawn, hand-coloured plate of the bird. Pallas mentions that the Sunbittern had already been depicted and vaguely described by contemporary writers. In 1759 a philosopher, Fermin, had given a vague account of a bird that was known then as "*Sonnenvogel*" and "*Sonnenreyger*" (Sunbird and Sunheron) in Dutch Guiana and as "*Oiseau du Soleil*" (Bird of the Sun) in French Guiana. Then in 1772 an Abbot Rozier had published a satisfactory figure and described a bird that he called the "*Petit Paon des Roseaux de Cayenne*" (Little Reedpeacock of Cayenne). Newton & Gadow (1896) reported other early confusions regarding the naming of the Sunbittern, however they list the Fermin publication as 1769 and not 1759 as it is in Pallas (1781).

Pallas confirms that both Fermin's description and Abbot Rozier's account refer to the species he is describing, but neither of them had tried to classify it or give it a scientific name. Pallas never visited South America (J. Haffer pers. comm.), and it is obvious from his paper that he described the Sunbittern from the rare, mounted specimens in the natural history cabinets (collections) of West Europeans. Thus, a unique type specimen cannot be designated.

Type locality

After the description by Pallas, later authors that we consulted referred to Suriname as the locality of origin of the Sunbittern (Berlepsch & Hartert 1902, Chubb 1916, Peters 1934, Friedmann 1948, Haverschmidt 1955), with the exception of Hellmayr & Conover (1942), who gave it as Brazil. Without explanation Haverschmidt, in a later publication (1968), changed the type locality to Brazil, perhaps following the example of Phelps & Phelps (1958) in their Venezuelan checklist. We find no documented reason for the recent use of Brazil as the type locality.

Sunbitterns in West European natural history collections of the 18th century originated without a doubt from the tropical coastal regions of northeastern South America. The mounted specimens in the mostly Dutch collections were most likely taken from Dutch Guiana (now Suriname). In the second half of the 18th century this Dutch colony was the most flourishing in the Guianan region where Dutch collectors of natural history specimens, particularly birds, were very active (Gordijn 1977).

Pallas titled his paper "Description of the so-called Surinam Sunheron (*Ardea helias*)", and distinctly describes what he calls "a rare Brazilian bird". The countries mentioned by earlier authors are irrelevant, because the type locality should be that country from where the specimen(s) came that were actually seen by the person making the formal nomenclatorial description. Although Pallas never specifically says the specimen that he carefully described and figured was from Brazil, he suggests that it was. Therefore we believe the correct type locality should be northeastern Amazonian Brazil. Regardless, whether the type locality is Suriname or Brazil, it would have no effect on nomenclature as the nominate race occurs throughout both countries.

Range

The range of the Sunbittern, now differentiated into three well-defined subspecies, extends from southern Mexico south in appropriate habitat to approximately 20°S in the Brazilian Amazonas including tropical areas of Bolivia and Peru (Meyer de Schauensee 1966, Blake 1977, Sick 1993). In the generally excellent book *A Guide to the Birds of Colombia* (Hilty & Brown 1986), the final line under the Sunbittern range reads "n Argentina, and Uruguay (rarely c Chile)". This must be the result of a production error, and pertains to some other species (*fide* Hilty *in litt.*), because the three countries of this line lie more than 1000 km south of the known Sunbittern range.

Clutch size

While it may be true that in the future a Sunbittern clutch of three eggs will be found, no three-egg clutch has been reported in the literature yet. Some authors (Van Tyne & Berger 1959, Lyon & Fogden 1989, Haye 1989) have stated that the clutch is 2–3 eggs, citing variously Bartlett (1866), Riggs (1948), and Wetmore (1965).

The frequently cited article by Bartlett (1866) unambiguously states that while three eggs were laid by a single female in 1865 in the London Zoo, the first two were laid "in May" and "the early part of June", perhaps a clutch of two. The third egg of Bartlett's zoo bird was laid at "the end of August" after the pair of Sunbitterns had successfully raised the chick of the second egg. Clearly this was a second nesting of this bird. Riggs (1948) says that the Bartlett bird "laid three eggs", but follows this with a correct recounting of the circumstances.

Wetmore (1965) describes "three single eggs" from Venezuela in the USNM, collected by the same person, but in two different years. Hilty & Brown (1986), obviously referring to these same three eggs, follow it with "10 May–9 July", a two month period clearly intending to indicate time of laying and not clutch size. One and two-egg clutches have been reported by various authors for wild-living birds (Penard & Penard 1908, Snethlage 1928, Skutch 1947, Lyon & Fogden 1989, Thomas & Strahl 1990).

Acknowledgements

For help in various ways we are most grateful to Jon Fjeldså, Jürgen Haffer, David Snow, James P. Kirnan, William Belton, John B. Trent, Lloyd Kiff, Roland Van Bocxstaele, Michael P. Walters and Lynx Edicions. Kenneth C. Parkes read an early draft, made many helpful suggestions, and clarified the type locality problem. The staffs of the Österreichischen Nationalbibliothek (Vienna, Austria) and Claus Nielsen of the Universitetets Zoologiske Museums Bibliothek (Copenhagen, Denmark) were helpful in providing copies of the original papers by Pallas and Illiger.

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Primary moult, wing-length and mass of the Lesser Honeyguide *Indicator minor*

by Leslie G. Underhill, George D. Underhill, Colin G. C. Martin & Michael W. Fraser

Received 8 December 1994

Honeyguides (Indicatoridae) exhibit unusual characteristics with respect to their breeding biology, guiding relationship with man, cerophagy, and physiology (Friedmann 1955, Short & Horne 1985). They are the only flying birds with nine primaries, all other species having either 10 or 11 primaries, although in the oscine passerines the outermost primary is tiny (Stresemann & Stephan 1968).

Stresemann & Stresemann (1966) summarised what was then known about the moult of one member of the family, the Greater Honeyguide *Indicator indicator*, giving the moult protocols of seven juveniles and six adults, all museum specimens from central African localities, mostly Cameroon. They concluded that Greater Honeyguides moult their primaries descendently, that adults in Cameroon commence moult in May and complete it in July/August, and that juveniles begin their first primary moult at an age of at most three to four months. No further information of significance has subsequently been published on the moult of this or any other honeyguide.

At the beginning of the 20th century, Lesser Honeyguides *Indicator minor* "were not recorded from near Cape Town", the closest localities being George, Oudtshoorn and Knysna, 300 km to the east (Stark & Sclater 1903). The expansion of the range of the Lesser Honeyguide into the Fynbos Biome of the southwestern extremity of Africa in the 1980s (Hockey *et al.* 1989, Underhill & Underhill 1992 and references therein) has been attributed to the range expansion of its main breeding host in southern Africa, the Acacia Pied Barbet *Tricholaema leucomelaina* (Fry *et al.* 1988). This barbet, in turn, owes its expansion into the fynbos to anthropogenic tree-planting there, especially of invasive *Acacia* spp., providing nest holes for the barbets (Macdonald 1986). However, there is circumstantial evidence that Lesser Honeyguides also parasitise Cardinal Woodpeckers *Dendropicos fuscescens*, Olive Woodpeckers *Mesopicos griseocephalus*, Olive Thrushes *Turdus olivaceus*, European Starlings *Sturnus vulgaris*, and Malachite Sunbirds *Nectarinia famosa* in the southwestern Cape (van der Merwe 1986, Hockey *et al.* 1989, Richardson 1989, Longrigg 1993, Spottiswoode 1994, van Zijl 1994).

The better-known honeyguide species have been shown to be sexually dimorphic, with males larger than females. Apart from the Greater Honeyguide, there are no known plumage differences between the sexes (Friedman 1955, Short & Horne 1985). This size dimorphism is readily observed in wing-length, and the measurements given by, for example, Clancey (1977) and Fry *et al.* (1988) show sufficiently little overlap to suggest that sex determination on this character might prove reliable for birds-in-the-hand. However, the published wing-lengths were based on museum specimens, which are subject to shrinkage compared with live birds (Vepsäläinen 1968, Knox 1980), and are unlikely to have been made using the "maximum length" technique (Evans 1986) now regarded as standard by bird ringers (Svensson 1992). Of the sources used by Maclean (1993) for wing-length (provided by G. L. Maclean *in litt.*), Clancey (1977) measured museum skins, but Manson (1985) measured live birds with "the wing flattened and straightened", i.e. the standard method.

This paper presents data on primary moult and wing-length for the Lesser Honeyguide near Cape Town, Western Cape, South Africa. Because data on the masses of bird species are regularly needed in theoretical studies (e.g. Payne 1989), the mass data have also been summarised.

Material and methods

Seventy-two Lesser Honeyguides were trapped during mist-netting operations at 10 localities within 30 km of Cape Town. Birds were ringed, aged (first-year birds have indistinct moustachial and subocular stripes; McLachlan & Liversidge 1970) and weighed to 0.5 g (usually using a 50 g Pesola spring balance with 0.5 g divisions). The wing-length was measured to 1 mm or 0.5 mm (maximum chord method, as in Evans 1986), and primary moult scores recorded according to the system described by, for example, Ginn & Melville (1983). The scores for the nine primaries were summed and divided by 45, to produce a "moult index" between 0 (not yet started moult) and 1 (completed moult) (Underhill & Zucchini 1988). The parameters of moult were estimated using data type 2 of Underhill & Zucchini (1988). Data from all ringing localities were pooled for the analyses. All measurements were not made on every bird.

The sexual dimorphism was expected to produce bimodal histograms for wing-length and mass. Under the assumption that these could be modelled as a mixture of two normal distributions, the parameters of the normal distributions, as well as the proportions of the two distributions in the mixture were estimated by the method of maximum likelihood, using directive DISTRIBUTION of Genstat 5.3 (Genstat 5 Committee 1993).

Results and discussion

The maximum likelihood estimaters of the parameters of moult were a mean starting date for primary moult of 8 January, a duration of 140 days, with 28 May as the mean completion date. The estimated standard errors for these parameter estimates were 15, 10 and 9 days, respectively. The large standard errors are a consequence of the small sample size, 68. The standard deviation of the starting date was 35 days (s.e. = 5 days), so that 95% of the birds were estimated to start (and complete) moult within 68 days of the mean starting (and completion) date (Fig. 1). Given that the moult of an individual bird takes place over 4.5 months, and that birds start (and complete) moult between about two months earlier and later than the mean dates, the overall duration of moult in the population

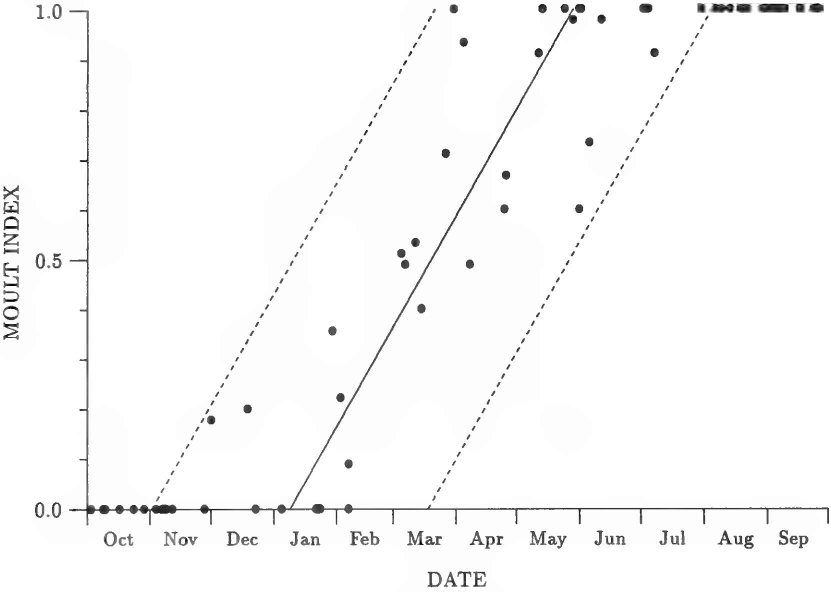

Figure 1. Moult indices for Lesser Honeyguides in the Western Cape. The solid line shows the estimated average progression of primary moult; the parallelogram encloses approximately 95% of all moulting birds.

is about nine months, from early November to late July. This is longer than the February–July period stated for southern Africa by Fry *et al.* (1988).

The distribution of wing-lengths showed clear bimodality (Fig. 2). Assuming that the standard deviations of male and female Lesser Honeyguides are equal, the estimates of mean wing-length of females and males were 88.9 mm and 94.6 mm, respectively (Table 1). To compare the fit of mixtures of two normal distributions with equal and unequal standard deviations, both models are fitted and the difference between the deviances, as computed by Genstat, has a χ^2_1 distribution (Genstat 5 Committee 1993: 330–341). The decrease in deviance (from 21.3 to 17.9) when allowing unequal standard deviations for females and males was not significant (change in deviance=3.4, $P>0.05$) and the assumption of equal standard deviations for females and males is tenable.

The estimated difference in mean wing-length between males and females was 5.7 mm; the 95% confidence interval for the difference, taking the correlation between the estimated parameters into account, was 4.0–7.4 mm. In seven regions in eastern and southern Africa, Clancey (1977) reported inter-sex wing-length differences of between 5.0 mm and 7.0 mm, using sample sizes per sex per region averaging 13 birds; Maclean (1993) reported a difference of 5.8 mm.

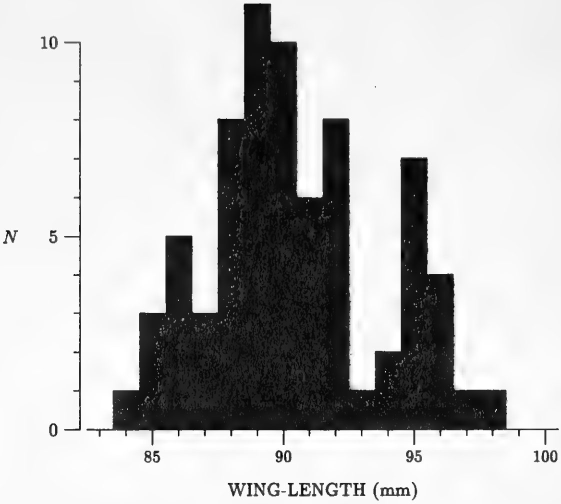

Figure 2. The distribution of wing-lengths of Lesser Honeyguides in the Western Cape.

TABLE 1
Estimates of wing-length parameters for sample of 71 Lesser Honeyguides mist-netted in the Western Cape

Parameter	Estimate	Standard error
Mean for females	88.86	0.37
Mean for males	94.62	0.73
Common standard deviation	2.08	0.23
Proportion of females	0.73	0.07

Clancey's wing-lengths were all of museum specimens, and therefore subject to shrinkage. His mean wing-lengths for the Cape Province and Natal, where the smallest subspecies of the Lesser Honeyguide occurs, were 85.6 mm for females and 91.4 mm for males, both 4% shorter than the wing-lengths from live birds measured by ringers using the maximum chord technique. Typically, shrinkage of wing-length in museum specimens is approximately 2% (e.g. Svensson 1992).

If Lesser Honeyguides are classified as female if their wing-lengths are less than 91.7 mm and male otherwise, approximately 9% will be misclassified. This classification rule applies only to the Western Cape and using the maximum length wing-measuring technique. Because inter-sex wing-length differences and the standard deviations appear to be fairly uniform across the range (Clancey 1977), taking the midpoint

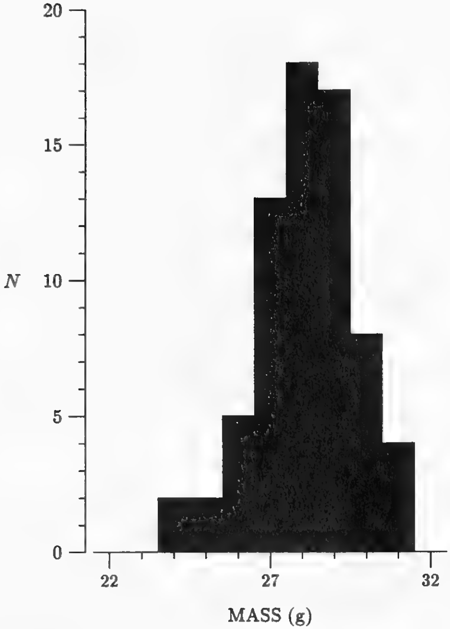

Figure 3. The distribution of masses of Lesser Honeyguides in the Western Cape.

between the means for the sexes would produce roughly the same probability of misclassification.

The percentage of females in the sample of Lesser Honeyguides caught in mist-nets was estimated to be 73% (Table 1). The Lesser Honeyguides were a by-catch, not a target species, and no attempts were made to attract them to the mist-netting sites by providing wax. It therefore seems likely that female Lesser Honeyguides are more mobile than males, and more likely to get caught in randomly (for them) positioned mist-nets. This is consistent with the biology of the species; male Lesser Honeyguides spend long periods of time stationary at "call-sites", the traditional singing perches where mating takes place (Ranger 1955), while females move extensively while searching for the nests of their hosts (Payne 1992).

The distribution of mass showed no bimodality (Fig. 3), and had a mean of 28.3 g and standard deviation 1.6 g (n=69). Maclean (1993) reported a mean mass of 28.2 g.

Acknowledgements

LGU acknowledges support from the Foundation for Research Development, Pretoria, and the University of Cape Town Research Committee. CGCM is assisted in the field by the Tygerberg Ringing Group, which is supported by the Tygerberg Bird Club. Professor G. L. Maclean provided information on references. J. Johnson, T. B. Oatley, D. Philogene and L. Silks contributed data from their ringing sites.

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Types and nomenclature of two Chilean parrots from the voyage of HMS *Blonde* (1825)

by Storrs L. Olson

Received 14 December 1994

During my investigation of archival records and specimens from the voyage of HMS *Blonde* (28 September 1824 to 15 March 1826; Captain Lord Byron), I discovered that the nomenclature of the two species of parrots obtained by the expedition in Chile has been seriously bungled. These species are now known as the Patagonian Conure *Cyanoliseus patagonus* (Vieillot) and the Slender-billed Conure *Enicognathus leptorhynchus* (King). I have introduced the ornithological history and archival sources of the voyage of the *Blonde* elsewhere (Olson 1986; in press). At the end of the voyage, the expedition's naturalist, Andrew Bloxam, submitted the specimens he had collected, along with his natural history notes, to the Secretary of the Admiralty. Bloxam himself never had anything further to do with the *Blonde* material and most of his observations were never published. The majority of Bloxam's specimens that still exist are in the British Museum (Natural History), as are various copies of his unpublished notes, in one of which are the following entries concerning Chilean parrots. Bloxam added specific names of his own invention, his only source of nomenclature being a translation of the 13th edition of "Linnaeus's" (=Gmelin's) *Systema Naturae* (Turton 1800). To avoid any possibility of these names being considered as taking their publication from the present work, I have replaced them with transcriptions that have no nomenclatural standing. Except for these instances, bracketed portions are from a rougher set of notes.

7. [27] Psittacus Parrakeet [Bloxam's specific name added a Latin locative suffix to the locality "Conception"]

N. 1. L. 20 inch. Tail long & pointed. Cere round the eye white. Cheeks covered with f[eathe]rs, head not crested. Upper parts muddy [dingy] green, tail coverts yellow, tail green, wing coverts brighter green, quill feathers blue. Bill black [short & strong], legs yellowish. Belly red, flanks & thighs yellow, on upper part of the breast a half circle [semicircle] of dusky white & brown feathers. Lower part dull green. Wing coverts underneath green, quills dark brown. They fly about in flocks of 20 or 30 uttering harsh screams & cries. Common about the peninsula of Talcahuana [near Conception]. They are also sometimes, tho' seldom, seen in the neighbourhood of Valparaiso. [Shot at Conception.]

8. [28] Psittacus Parakeet [Bloxam's specific name added a Latin locative suffix to the locality "Chili"].

N. 2. L. 16 inch. Upper mandible rather long & sharper than the last, dark colored. Legs scaly & dark colored. Upper plumage fine green, top of head faintly barred with black. A red line runs on each side from the eye to the upper mandible & crosses over at the base of the beak. Tail f[eathe]rs rather long, pointed & red. Quill f[eathe]rs of wings bluish green. Under parts green with a tinge of red about the belly. Tail underneath red, quill f[eathe]rs underneath dusky brown. Cere round the eye is dark colored. A few minute red f[eathe]rs surround the eye. Shot at Conception. Both this & the former are of the Parakeet tribe, having their heads without crests tho' covered with feathers & a long pointed tail.

The preceding descriptions refer unequivocally to *Cyanoliseus patagonus* and *Enicognathus leptorhynchus*, respectively. The *Blonde* anchored off Talcahuano, near Concepcion, on 29 September and sailed on 12 October 1825, so we now know the collection data for these specimens, which are each ultimately holotypes, with considerably more precision than has been stated before. These data could possibly be further refined by consulting Bloxam's diary in the B. P. Bishop Museum, Honolulu, the Chilean portions of which I have not examined.

Some five years after the return of the *Blonde*, J. E. Gray (1831) published descriptions of six species from the voyage based on specimens said then to be in the British Museum, though four of these species were from Hawaii and had been previously known and described (Olson in press). One, however, was a parrot from Chile, that was named as follows:

> *Lord Byron Parrot. Psittacus (Aratinga) Byroni.* Children's MSS. Brit. Mus. Green; forehead lores to the orbits bright-red; tail feather [sic] rufous, brown; shaft greenish black, larger quills bluish, with shaft and inner edge black; tips of crown-feathers blackish; upper mandible elongate, produced; apex acute; culmen produced. Length 17 inches; wing 9; bill 1¼ inches. Inhab. Chili.

J. G. Children was J. E. Gray's predecessor at the British Museum, but there does not seem to be an existing manuscript that would bear on this subject (M. Walters pers. comm.). Regardless, the preceding description can only apply to the species we now know as *Enicognathus leptorhynchus*. As incredible as it may seem, apparently no ornithologist in the past 163 years, even the usually meticulous Salvadori (1891), has read J. E. Gray's description of *byroni* with sufficient attention to comprehend its consequences, because the name *byroni* later came to be used as a subspecies of *Cyanoliseus patagonus* and is still thus employed. Warren (1966: 47) noted the discrepancy between the original description and the appearance of the putative type of *byroni* (and all other specimens of *Cyanoliseus patagonus*), but without coming to the realisation that Gray's name obviously applied to another species altogether.

In the 1830s, J. E. Gray's brother, G. R. Gray, entered the bird collections of the British Museum into a series of volumes sometimes referred to as the Old Vellum Catalogue (Warren 1966: 47), or simply the Vellum Catalogue (Knox & Walters 1992), in which Bloxam's two Chilean parrots were entered in book 22. The entry for species number 4 is "*Psitticara leptorhynca* King. Zool. Proc." under which appears "*Aratinga Byronii* Vigors' Mss". Two specimens are listed: 4a is from "Chili, Lord Byron Capt. R.N." and 4b is from "King's Voyage, The Admiralty". The former is the true holotype of J. E. Gray's (1831) *Psittacus byroni*, though what Vigors's connection with the name may have been I have not determined. The latter specimen is surely the holotype of *Psitticara leptorhyncha* King (1831), which has been overlooked in the general collections and was not listed by Warren (1966). Salvadori (1891) mentions this specimen, giving its provenance only as "The Admiralty", apparently without realising it was from

King's voyage and therefore the type specimen. Each of these specimens has suffered damage to the bill—the end of the upper mandible is broken off in Bloxam's bird and the entire upper mandible is lacking in King's, so that the feature that gave the species its name is unfortunately no longer present in the type.

Cyanoliseus patagonus appears in book 22 as species number 34 and is listed with the following sequence of names: "*Psittacus patagonicus*, Vieill., *Psitticara Bloxhami* [sic] Mss., *Psittacara patagonica* Less., *Arara patagonica* Less., *Ps. platyrhynchus* Les.?" The two specimens are 34a from "Chili, Lord Byron" and 34b from "Rev^{d}. Hennah". The former is the specimen that has for years erroneously passed as the type of J. E. Gray's *Psittacus byroni* (e.g. Warren 1966). The error I believe is traceable to G. R. Gray, who must have forgotten his own entries in the Vellum Catalogue and later confounded the two specimens of parrots from the voyage of the *Blonde*. Beginning in 1845 (G. R. Gray 1844–49: vol. 2: 413), and several times later, G. R. Gray (1859, 1870) listed *P. byroni* as a synonym under names applicable to the Patagonian Conure *Cyanoliseus patagonus*.

Thus, when the distinctiveness of the isolated Chilean form of this species was recognised, the name thought to be applicable to it was J. E. Gray's *byroni*. This distinction was first proposed in an anonymous announcement that Salvadori (1891) credits to P. L. Sclater (*Proc. Zool. Soc. London* 1873: 761):

> Two of the smaller variety of the Patagonian Conure, received in exchange Oct. 13th.
>
> This smaller and brighter form of the Parrot, found in Mendoza and other states of the Argentine Republic, would appear to be best entitled to the name *patagonus*, that name having been founded by Vieillot on Azara's description of specimens seen at Buenos Ayres. The larger form of Chili and the west coast may be called *Conurus byroni* (J. E. Gray), if, as proposed by Finsch, *cyanolyseos* of Molina be rejected as inadmissible.

Ever since, the Chilean subspecies of Patagonian Conure has taken the name *byroni* and has even been known as "Lord Byron's Conure" (e.g. Prestwich 1958). Incidentally, it should be noted that Prestwich (*op. cit.*) confounded his Byrons in the first edition of his book, considering the name *byroni* to have been dedicated to the poet's grandfather (who was not a peer), rather than to the poet's cousin and successor, who was captain of the *Blonde*. The error was corrected in the second edition of 1963.

From the original description it is clear that the name *Psittacus byroni* J. E. Gray (1831) pertains to the same species as *Psitticara leptorhyncha* King (1831), proposed in the same year. King's publication was delivered to the Zoological Society on 6 January 1831 (see *Proc. Zool. Soc. London* 1937: 78), whereas the exact date of issue of the first part of J. E. Gray's *Zoological Miscellany* is apparently uncertain (see editor's note to the 1971 facsimile edition). It is hardly likely to have been issued prior to King's paper in any case, and, in the absence of information to the contrary, for nomenclatural purposes the date of J. E. Gray's publication must be set at 31 December. Therefore *Psittacus byroni* J. E. Gray (1831) becomes a junior subjective synonym of *Psitticara leptorhyncha* King (1831) and simply drops out of use, so that we may fortunately continue using *Enicognathus leptorhynchus* (King) for the Slender-billed Conure.

This means, however, that the Chilean subspecies of Patagonian Conure is without a name, for which I therefore propose:

Cyanoliseus patagonus bloxami subsp. nov.

Holotype. Adult skin, British Museum (Natural History) Vellum Catalogue 22:34a. Collected near Concepcion, Chile, probably on the Talcahuano Peninsula, between 29 September and 12 October 1825, by Andrew Bloxam.

Characters. As has been recognised by many authors, the Chilean bird is much larger and has the dingy whitish pectoral band better developed, being wider and more nearly complete across the breast, rather than being confined to the sides as in nominate *patagonus* of Argentina. The amount and intensity of red and yellow in the belly has been subject to conflicting interpretation. Sclater (see above) considered the nominate form to be brighter, whereas Forshaw (1989: 470) thought the red brighter in the Chilean birds. In the small series of each that I examined, the ventral coloration appears to be subject to considerable individual variation, as well as being affected by fading and by the manner of preparation. Both bright and dull birds with varying amounts of red or yellow were present in both subspecies. Less equivocal, however, is the dorsal coloration, which in the Chilean birds is darker green, the feathers tipped and suffused with fuscous, so that the head, nape, and mantle are essentially concolorous. In nominate *patagonus* the upper parts are lighter, with the dusky forehead set off by the lighter green of the nape as compared with the more brownish-grey mantle.

Distribution. Isolated in central Chile, formerly from Atacama south to Valdivia, but numbers now much reduced due to habitat destruction, hunting, and trapping for the pet trade (Forshaw 1989).

Etymology. To Andrew Bloxam, naturalist of HMS *Blonde*, with the hope that this will more permanently engrave his name in ornithological nomenclature. Two other birds were once dedicated to him: *Sylvia bloxami* J. E. Gray (1831), and *Phytotoma bloxami* Jardine and Selby (1827), which latter was described under the same name, apparently independently, by Griffith (1829). These are synonyms of the species now known as *Anairetes parulus* (Kittlitz) and *Phytotoma rara* (Molina), respectively, so that Bloxam's eponyms have long passed out of use. Even when Jardine and Selby named *Phytotoma bloxami*, they did not indicate to whom the species was dedicated, saying only that the specimen had been brought back by Lord Byron.

Acknowledgements

For access to Bloxam's notes, specimens, registers, and literature, I am most grateful to staff of the British Museum (Natural History), especially Michael Walters, who has assisted in this particular endeavour in numerous ways and who commented on the manuscript. For additional comments I am grateful to Gary R. Graves.

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A nest of the Restinga Tyrannulet *Phylloscartes kronei*

by Heinz G. Remold & Mario B. Ramos Neto

Received 31 December 1994

The recently described Restinga Tyrannulet *Phylloscartes kronei*, an endangered southeast Brazilian endemic belonging to the *Phylloscartes ventralis* (Temminck) group, seems to occur primarily in sand-ridge woodland (*restinga*) and adjacent riverine forest of the Ribeira valley in southeastern São Paulo, Brazil (Willis & Oniki 1992).

According to our observations this species seems to prefer, at least in the breeding season, swampy areas with standing pools of water. On 24 October 1993, we detected a nest in swampy *restinga* about three miles (5 km) northeast of the village Barra do Ribeira. The location is near Porto do Prelado (24°36′S, 47°18′W according to E. O. Willis, *in litt.*). The oven-shaped nest was about 4 feet (1.3 m) from the ground in a low bush with an opening towards the southeast. The outside of the nest was covered with lichen and moss and was about 13 cm wide and 16 cm high. The nest contained 2 young. The adults remained close to the nest during the whole time we spent in this area (4 hr) and continued feeding their young. No song activity was recorded during this time. E. O. Willis and J. Ragusa Netto recorded young out of the nest in December (Willis & Oniki 1992), indicating with our nest a spring breeding season as in most birds of the region.

An egg, 17.0 × 13.5 mm, perhaps of this species rather than of the Mottle-cheeked Tyrannulet *P. ventralis*, was recorded from São Paulo (Nehrkorn 1910). The dimensions of recorded eggs of *P. ventralis* are 15.0–17.0 × 12.0–12.5 mm (Dabbene 1919, Smyth 1928) and nests have side entrances (see also Klimaitis 1984, Belton 1985). Unlike our nest of *P. kronei*, these nests are often inside masses of *Tillandsia usneoides*. However this epiphyte is not as common in the lowlands, where *P. kronei* occurs, as in the uplands and southward where *P. ventralis* is found. The Southern Bristle Tyrant *P. eximius* has a mossy oven-shaped nest (Bertoni 1901). In contrast, the Yellow Tyrannulet *Capsiempis flaveola*, placed by Traylor on morphological grounds into the genus *Phylloscartes* (Traylor 1977) but which is now thought to be closer to *Phaeomyias* (Lanyon 1988), makes a cup nest (Skutch 1960).

Acknowledgement

We thank E. O. Willis for help with the references and the manuscript.

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First field observations on the Sidamo Lark *Heteromirafra sidamoensis*

by Iain S. Robertson

Received 7 January 1995

The Sidamo Lark is an Ethiopian endemic previously known from two specimens, one collected less than 2 km south of Negele (5°20′N, 39°35′E) at 1450 m in Sidamo Province on 18 May 1968 (Erard 1975) and a second individual collected on 15 April 1974, 12 km southeast of Negele (Ash & Olson 1985).

On 27 November 1974 Sandra Fisher, Michael Lambarth and myself searched for larks in an area of grassland with a few scattered low whistling thorns *Acacia drepanolobium* and other acacias about 6 km south of Negele. The habitat looked very suitable for larks but we were unable to find any. The following morning we searched a more extensive area of similar grassland 13 km southeast of Negele at the junction of the Filtu and Arero tracks, where a brief snatch of a lark-like song was heard by ISR. A lark hovering about 4 m above the grass could not be relocated after it dropped into cover. On searching the similar habitat south of the junction almost immediately ML saw a lark run across a patch of bare ground surrounded by taller grass. We converged on the spot and accidentally flushed at least four similar larks which rose to a height of about 5 m and hovered momentarily, uttering a short call, before dropping back into the grass. We soon located the original bird and obtained excellent views. I was able to watch the bird through 10 × 42 binoculars and through a × 25 tripod-mounted telescope at distances down to about 10 m. The light conditions were excellent and there was little wind. The bird was unfamiliar to me but it had a distinctive appearance and I confidently identified it as *H. sidamoensis*. It was later ascertained that this was the exact site where Ash found his birds (J. S. Ash *in litt.* 1994).

General appearance and behaviour

When crouched the bird had an almost quail-like appearance, due to the large rounded head and prominent eye together with the richly marked upperparts and rather short bill. When active it adopted a very upright stance, reminiscent of Isabelline Wheatear *Oenanthe isabellinus*. The bird was rather tame and confiding, taking little notice of our small group. It was, however, very unobtrusive and impossible to see when it entered the taller patches of grass. It appears that the species crouches and remains motionless to avoid detection and also that when flushed it runs into the cover of tall grass after alighting. This unobtrusive behaviour is well known in the two other species in this genus (Archer & Godman 1961).

Description

The upperparts including the wing-coverts were richly patterned rufous with darker centres and pale buffish tips to the feathers producing a distinctive scaly and streaked appearance, contrasting with the nape which was pale greyish-buff with fine dark streaks, the streaking continuing onto the sides of the neck and upper breast. The crown was brown with dark streaks and whitish tips to the feathers forming fine scales; a narrow whitish median crown-stripe and whitish supercilium were present.

The ear-coverts were rufous-brown and the lores pale buff. The throat was white, unstreaked, the breast buffish with fine dark streaks concentrated at the sides. The flanks were unstreaked warm-buff and the belly appeared pale buffish-white. The tail, lower breast and belly were wet from contact with dew on the grass and it was not possible to determine the colour nor the length of the outer tail feathers; however the tail appeared rather ragged, and this was also true of the birds which we flushed.

The bill was yellowish-horn, rather short, with the culmen slightly decurved. The legs were dark straw coloured, appearing quite long and fairly robust. Despite the close range I was unable to make out the length of the hind claw. The dark eye appeared large, perhaps accentuated by the pale lores and supercilium.

Calls

The birds which flushed uttered a soft *tswee-ee-eep* at the point where they hovered before dropping back into the cover.

Although I have no experience of the other members of the genus (Rudd's Lark *H. ruddi* and Archer's Lark *H. archeri*), I was struck by the similarities between *H. sidamoensis* and photographs of *H. ruddi*; in particular the upright stance, prominent dark eye and rather stout bill. In Keith *et al*. 1992 two song types are described for *H. ruddi*; one of them, in which birds fly up from the grass, whistle plaintively and drop back into the grass, sounds very similar to the behaviour of the birds which we saw. I suspect that the song of *H. sidamoensis* will be found to be similar to that of *H. ruddi* and that the 'flappeting' display flight tentatively assigned to *H. sidamoensis* by Ash probably refers to another species. We did not, however, record any other species of lark in the immediate area of the grasslands.

Remarks

This is the first field observation of the species. It was looked for unsuccessfully at the type locality in October/November 1971 (Erard 1975) and again in March 1989 (Ash & Gullick 1989). The author visited the area in November 1989 but due to military activity it was not possible to search the grasslands. In November 1994 the military training camp had been removed, the airstrip was disused and there was little sign of human activity. The grasslands are no longer grazed by gazelles or oryx; these appear to have been extirpated, perhaps due to the military presence in the late 1980s. Local Borana people were grazing flocks of goats and cattle on the grassland but not in the immediate vicinity of the lark site. There had been prolonged rains in the wet season of 1994 resulting in a good growth of grass, though the habitat was beginning to dry out by the time of our visit. It would appear that suitable habitat still exists in the area and that the species has survived in these grasslands undetected, probably due to its unobtrusive habits and the fact that previous searches have been adversely affected by a combination of drought conditions and military activity.

The species is treated as 'indeterminate' by Collar & Stuart (1985). This seems inconsistent with the treatment of two other species endemic to southern Ethiopia, White-tailed Swallow *Hirundo megaensis* and Stresemann's Bush-Crow *Zavattariornis stresemanni*, both of which are treated as 'rare'. The ranges of these two species are considerably larger and contain a much greater area of habitat suitable for them. The extent of grassland habitat south of Negele would appear to be quite restricted by comparison. Both of the congeners of *H. sidamoensis* have very restricted ranges, and Collar & Stuart consider *Heteromirafra* to be a threatened taxon.

Acknowledgement

I am most grateful to Dr J. S. Ash for commenting on a draft of this paper.

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Edgar Layard and Charles Pearce's Fijian bird types in the Macleay and Australian Museums, Sydney, with comments on specimens in museums in Britain

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Received 13 January 1995

Longmore (1991) and Stanbury (1969) have produced type lists of birds in the Australian and Macleay Museums respectively. In the light of investigation of some of the Fijian specimens in these two museum collections, these lists can be extended and new information added. We refer here to specimens collected by Edgar Leopold Layard, Honorary Consul first in Fiji (1874–1876) and then New Caledonia (1876–1881), and Charles Pearce, who was resident on Fiji and for a time acted as Layard's servant.

Edgar Layard's specimens are usually identified in some way as such, a fair proportion of his specimens still having their original labels. These were ones specially printed for Layard, with sections for soft part colour and stomach contents as well as the more usual locality and date details. However, even if they have lost their original labels, it is still often possible to identify many of his specimens by his distinctive preparation technique. The specimens are usually in good basic order, and have the legs uncrossed but touching neatly together at the ankle, from which the lower legs (tarsometatarsus and toes) splay. Charles Pearce and Leopold Layard—Edgar Layard's son, who was Vice-Consul with him at Noumea and also an ardent bird collector—both had more conventional, and rather less successful, methods of preparing birds, with the legs usually crossed. Unfortunately, both father and son were lax about marking their type material as such, and the situation is complicated by the fact that individual birds from their type series are now scattered in different museums and countries.

There are many Layard specimens in the two Sydney museums with extensive natural history collections; the Australian Museum (founded in the 1820s, which is the State Museum for New South Wales, and has very extensive bird collections) and the Macleay Museum of the University of Sydney. The birds in the Macleay collection are much smaller in number (about 7500) and nearly all date from the time of William John Macleay (1820–1891), who must have received Fijian material directly from Edgar Layard. The specimens were originally kept in the Macleay family house in Elizabeth Bay, an inner suburb of Sydney, but William John eventually bequeathed the entire Macleayean collections to the University of Sydney, who built the magnificent Macleay Museum on campus in 1888 in order to house them.

The following Layard or Pearce specimens in the Macleay and Australian Museums appear to have taxonomic significance, and have not previously been noted. In all cases the current scientific name as given in Watling (1982) is given in square brackets. Family names follow Morony, Bock & Farrand (1975).

Columbidae

Chrysoena viridis Layard, 1875. *Proc. Zool. Soc. London:* 151.
[=*Ptilinopus layardi* (Elliott, 1878). *Proc. Zool. Soc. London:* 567. New name for *viridis*, pre-occupied.]

Five specimens at the Macleay Museum, all from Kandavu (=Kadavu), Fiji, appear to be syntypes of *viridis*, and thus also *layardi*:

	Total length	Wing	Tail	Tarsus	Bill
Type description*	7	$4\frac{1}{2}$	$2\frac{1}{4}$	$\frac{5}{6}$	$\frac{5}{6}$
B.2076 (male)	7	$4\frac{5}{8}$	$2\frac{1}{4}$	$\frac{7}{8}$	$\frac{13}{16}$
B.2077 (male)	$7\frac{1}{8}$	$4\frac{1}{2}$	$2\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$
B.2078 (male)	7	$4\frac{5}{8}$	$2\frac{7}{16}$	$\frac{15}{16}$	$\frac{13}{16}$
B.2079 (female)	$6\frac{1}{2}$	$4\frac{3}{8}$	$2\frac{1}{2}$	$\frac{15}{16}$	$\frac{13}{16}$
B.2080 (female)	$7\frac{1}{4}$	$4\frac{5}{8}$	$2\frac{1}{2}$	$\frac{15}{16}$	$\frac{3}{4}$

*converted from lines i.e. twelfths of an inch.
(all measurements in inches).

All five fit the plumage descriptions for their respective sexes. All are fair to good specimens with legs uncrossed in typical Edgar Layard style; all have been catalogued by the Macleay Museum under the name *Ptilinopus layardi* Elliot, 1878—the birds are, however, labelled *C. viridis*. Layard does mention in the type description that he had males (in the plural) in front of him, which had been collected on 8 August, presumably 1874.

Several specimens in the collections of the Natural History Museum at Tring were also collected by Edgar Layard from Kadavu (Salvadori 1893: 158), and some are probably syntypic although they are not listed in Warren (1966). A specimen in the Tristram Collection at Liverpool Museum, National Museums and Galleries on Merseyside, U.K. (T.9602, see Tristram 1889: 44) was also collected by Layard in Kandavu (=Kadavu), Fiji, but not until 10 September 1875. As the type manuscript was published on 2 March 1875, this specimen can have no type status. Although this specimen has a label in E. L. Layard's hand and is a nicely prepared specimen, the legs are crossed.

Loriidae

Trichoglossus (Glossopsitta) amabilis Ramsay. Sydney Morning Herald 28 July 1875.
[=*Charmosyna amabilis* (Ramsay, 1875).]

Four specimens in the Macleay Museum appear to agree in general with the description and measurements, although there is no real sign of 'two or three yellow feathers on the sides of the chest under the wings' which Ramsay noted on some of the males; in the two Macleay Museum males there is only a yellowish tinge on some of the underwing feathers. One of the Macleay Museum specimens (B.1797) does not have nearly so much of a yellow tip to the tail as the other (B.1978), in fact even less than either female. The description of the adult females seems generally to match well with both Macleay Museum females.

	Total length	Wing	Tail	Tarsus	Bill	Culmen
Type description (male)	6.7	3.6	3.25	0.46	0.5	0.35
Type description (female)	6.5	3.6	3.05	—	—	—
B.1797 (male)	6.4	3.5	2.8	0.5	0.6	0.45
B.1798 (male)	6.7	3.5	3.1	0.55	0.55	0.40
B.1799 (female)	6.6	3.6	3.0	0.55	0.55	0.40
B.1799a (female)	6.0	3.3	2.8	0.50	0.60	0.40

(all measurements in inches)

According to the type description the types were collected by Charles Pearce at Ovalau, Fiji. A later note by Edward Pierson Ramsay in the *Proceedings of the Linnean Society of New South Wales* of 1876/77 confirmed the exact date (28 July 1875) of publication of his description of the 'beautiful little species obtained for the first time I believe, at Fiji, by Charles Pearce, 17th June last, 1875' (note that Watling (1982) gives the year of publication incorrectly as 1876). The four Macleay Museum specimens are all labelled with the locality, Ovalau, but the collector is not recorded. All four are fair specimens, the two males with their legs crossed as Pearce's specimens often were. The females, despite having uncrossed legs, do not have them splayed and are probably also Pearce specimens.

Pursuant with modern revisionary taxonomy, we elevate the specimen B.1798 (male) to the status of lectotype; it is a close match of both the plumage details and measurements in the type description. B.1797, B.1799 and B.1799a are paralectotypes.

Trichoglossus aureicinctus Layard, Nov. 1875. *Ann. Mag. Nat. Hist.* 16: 344.
[=*Charmosyna amabilis* (Ramsay, July 1875).]

Two Layard specimens in the Liverpool Museum have no type significance for Ramsay's name *amabilis*, but one (T.2774) is a syntype of the synonym *aureicinctus* Layard, described in November 1875 (Wagstaffe 1978). The bird has an original label in Edgar Layard's hand, which includes the word 'Type' written clearly in the bottom left-hand corner. It was obtained at Ovalau on 15 June 1875 and, although labelled by Edgar Layard, is not typical of his preparation technique. Indeed, Layard mentioned in his type description that 'the species was first indicated by my son . . . who . . . could not obtain one. A few were subsequently shot . . . on Ovalau . . . by some one; and one passed into my possession'. The Liverpool bird was probably prepared by, and possibly collected by, Charles Pearce; if so, it was obtained two days before Pearce obtained the specimens Ramsay used for the description of *amabilis*. However, Pearce had obviously sent the bird now in Liverpool direct to Layard.

	Total length	Wing	Tail	Tarsus	Bill
Type description	6.50	3.50	3.25	0.35	0.50
T.2774	6.50	3.65	3.00	0.50	0.45

(measurements in inches)

Another specimen of the Red-throated Lorikeet, very much typical of Edgar Layard's taxidermy style and with a label in his hand, is at the Liverpool Museum (T.2773). It was collected in Taviuni, Fiji, in August 1875, but does not have any type significance; Layard clearly stated that he had just one specimen, probably from Ovalau, in front of him while composing the type description of *aureicinctus*.

Passeriformes

Edward Ramsay's paper read to the Linnean Society of New South Wales on 29 November 1875 (but published in 1876) consisted of the descriptions of three '*new species* [which] were discovered by Mr. Charles Pearce in the Fiji Islands; and now form part of the magnificent collection at Elizabeth Bay'. This referred to the Macleay collections, at that time under the stewardship of William John Macleay. Ramsay later described a new *Pachycephala* at a Linnean Society meeting, which was also published in 1876. The types for all these new forms, all passerines, are still extant in the Macleay Museum.

Muscicapidae/Turdinae

Merula ruficeps Ramsay, 1876. *Proc. Linn. Soc. N.S.W.* 1: 43.
[=*Turdus poliocephalus ruficeps* (Ramsay, 1876).]

Ramsay's account of *Merula ruficeps* includes descriptions of both male and female. The description appears to be based on just two specimens in the Macleay Museum (B.5259, male; B.5260, female). Both specimens are fair; although with uncrossed legs, these protrude at an angle and could well be Pearce specimens.

	Total length	Wing	Tail	Tarsus	Bill (from forehead)	Bill (from angle of mouth)
Type description (male)	6.5	4.1	2.7	1.2	0.9	1.1
Type description (female)	7.5	4.1	2.9	1.2	0.9	1.1
B.5259 (male)	6.75	4.0	3.2	1.2	0.75	1.0
B.5260 (female)	7.85	4.05	3.5	1.35	0.85	1.08

(all measurements in inches)

Ramsay's description of the female appears to be largely confined to details and measurements of an immature specimen; these values do not fit those of B.5260. Seebohm (1881: 256) stated that there were no specimens of this form in the British Museum—he had borrowed Layard's type of *Merula bicolor* for the purpose of giving an account of the bird. There are no specimens of *T. p. ruficeps* in the Liverpool Museum, and no suitable candidates in the Australian Museum.

We consider only the male (B.5259) fits the type description closely and therefore select this bird as the lectotype. B.5260 is a paralectotype.

Merula bicolor Layard, 1876. *Ibis* (3)6: 153.
[=*Turdus poliocephalus ruficeps* (Ramsay, 1876).]

Layard also named the form presently known as *Turdus poliocephalus ruficeps*, as *Merula bicolor*. This description was also dated 1876, but was published two months after Ramsay's description. Layard stated that he used specimens 'brought by Mr. Pearce' for his description and it is possible he too used the Macleay Museum specimens B.5259 and B.5260 in this description. Layard could have seen these two specimens before they left Fiji for the Macleay Collection at Elizabeth Bay; indeed, judging from their appearance, he may have had a hand in their preparation.

	Total length	Wing	Tail	Tarsus	Bill (from forehead)
Type description of *bicolor*	7.0	4.0	3.0	1.3	1.1
B.5259 (male)	6.75	4.0	3.2	1.2	0.75
B.5260 (female)	7.85	4.05	3.5	1.35	0.85

(measurements in inches)

Muscicapidae/Sylviinae

Vitia ruficapilla Ramsay, 1876. *Proc. Zool. Soc. N.S.W.* 1: 42.
[=*Vitia r. ruficapilla* Ramsay, 1876.]

Three specimens in the Macleay Museum, despite being wrongly labelled *Drymochoera badiceps* Finsch (the Viti Levu subspecies), are probably Ramsay's types of *Vitia ruficapilla*. All three are fair specimens with uncrossed legs, and all marked as from Kandavu (=Kadavu), Fiji. There is no record of collector, but they appear to resemble E. L. Layard's style rather than Pearce's rather rougher technique. Perhaps the two men prepared them together.

	Total length	Wing	Tail	Tarsus	Bill
Type description	4.8	2.4	2.5	0.97	0.7
B.7346 (male)	5.0	2.5	2.5	1.0	0.6
B.7347 (male)	5.25	2.5	2.4	1.0	0.6
B.7348 (female)	5.0	2.5	2.4	1.15	0.6

(all measurements in inches; bills on B.7346 and B.7348 are damaged, length is therefore estimated)

Fine bill measurements (in inches):

	From forehead	From angle of mouth	From nostril	Height at nostril	Width at nostril
Type description	0.7	0.72	0.4	0.2	0.2
B.7347	0.7	0.7	0.45	0.15	0.15

(these measurements are not possible for B.7346 or B.7348)

Ramsay's description concentrates on the male, and only mentions the female as being the same in size and plumage as the male. He gives no separate measurements.

Only the male B.7347 is directly comparable with the type description. We therefore select it as the lectotype. B.7346 and B.7348 are paralectotypes. These specimens are also the types of the genus *Vitia* Ramsay (=*Cettia* Bonaparte).

Muscicapidae/Pachycephalinae

Pachycephala kandavensis Ramsay, 1876. *Proc. Zool. Soc. N.S.W.* 1: 65. [=*Pachycephala pectoralis kandavensis* Ramsay, 1876.]

Longmore (1991) notes four syntypes from Kadavu, Fiji, formerly in the Macleay Museum (Stanbury 1969), now in the Australian Museum (O.46766-69). These have no record of collector but from their good condition (although they have obviously been ruffled at some point, probably by being caught between museum drawers) and uncrossed legs, splayed from the ankle, they were almost certainly collected and prepared by Edgar Layard. The date of collection (1875) recorded on the labels also strongly suggests that they are Layard specimens.

There is no trace of the egg that is mentioned in the type description. A Layard egg recorded as *Pachycephala pectoralis torquata* is in the Natural History Museum at Tring, but is very dark and clearly highly abnormal (Michael Walters, pers. comm. December 1994). It does not fit Ramsay's description. Two skins at Tring were collected by Edgar Layard from Kadavu, but cannot have type status as Ramsay stated clearly in his type description that the specimens he was referring to were in the 'collection of Wm. Macleay Esq.'. Both skins at Tring are females, one of which bears the collecting date 8 August 1874.

Pachycephala neglecta Layard, 1879. *Proc. Zool. Soc. London*: 147. [=*Pachycephala pectoralis graeffii* Hartlaub, 1866].

Five specimens at the Macleay Museum are marked as from the type locality, Ovalau. Layard makes remarks in his description which indicate that he had a number of birds in front of him ('. . . not always present . . .', '. . . some specimens') but at least two of the birds in the Macleay Museum cannot have any type status. Layard stated 'of the female of *P. neglecta* I unfortunately know nothing . . . I have six specimens of *P. neglecta*, all males . . .', which rules out the two females

B.5430 and B.5432. B.5433 is also recorded on the label as a female, but in fact could be the one Layard records under the remark '. . . very young male', as it does show a smattering of yellow feathers underneath as in his notes. This appears to be found only in the young male bird, not the female. B.5433 does not, however, match the type description measurements well.

Of the two remaining specimens, B.5429 (male) has crossed legs and does not look like a Layard specimen—although Layard does not actually say the specimens were of his own preparation. Neither B.5429 nor B.5431 has got the yellow spot between eye and nostril mentioned in Layard's description. They do not match the measurements of the type description well.

	Total length	Wing	Tail	Tarsus	Bill to gape
Type description	$6\frac{1}{2}$	$3\frac{3}{4}$	$2\frac{5}{6}$	$1\frac{1}{12}$	1
B.5429 (male)	$6\frac{1}{2}$	4	$3\frac{1}{4}$	$1\frac{1}{16}$	$\frac{5}{8}$
B.5431 (male)	$5\frac{5}{8}$	$3\frac{7}{8}$	$2\frac{5}{8}$	$1\frac{1}{16}$	$\frac{11}{16}$
B.5433 (female)	$6\frac{5}{8}$	$3\frac{1}{2}$	$2\frac{13}{16}$	$1\frac{1}{16}$	$\frac{11}{16}$

(all measurements in inches)

We conclude that none of the Macleay Museum specimens are likely to have type status for *Pachycephala neglecta* Layard. The types are in the Natural History Museum's collections at Tring. According to Warren & Harrison (1971: 374), the most representative syntype is adult male 1898.9.20.1006, but they added that 'several other' syntypes exist in the collection. Gadow (1883: 203) lists only two Layard specimens, an adult male, collected at Ovalau on 20 March 1875 (which is in fact the immature male 1898.9.20.1004) and a juvenile male collected at Kandavu (=Kadavu) on 31 August 1874. This latter specimen is actually from the subspecies *Pachycephala pectoralis aurantiiventris*, and cannot therefore be from Kadavu, but must be from Vanua Levu.

The *P. p. graeffii* specimens at Tring were checked in December 1994. Warren & Harrison's type (1898.9.20.1006) has a distinct yellow spot between the eye and nostril on both sides. It has an E. L. Layard printed label, with the locality Ovalau, but no date of collection and is not sexed. The preparation of the skin is typical of Edgar Layard.

There are several other skins at Tring from Ovalau that may have type status for *Pachycephala neglecta* Layard. Most were obviously prepared by Edgar Layard:

	Sex	Total length	Wing	Tail	Tarsus	Bill to gape
Type description		$6\frac{1}{2}$	$3\frac{3}{4}$	$2\frac{5}{6}$	$1\frac{1}{12}$	1
1898.9.20.1006 collected? good yellow spot between eye and nostril	?	$6\frac{1}{2}$	$3\frac{3}{4}$	$2\frac{3}{4}$	$1\frac{1}{12}$	$\frac{7}{8}$

continued overleaf

	Sex	Total length	Wing	Tail	Tarsus	Bill to gape
1898.9.20.1002 coll. 10.3.1875 very slight yellow spot	M	$6\frac{1}{4}$	$3\frac{1}{2}$	$2\frac{7}{8}$	1	$\frac{7}{8}$
1898.9.20.1003 coll. 11.4.1876 no yellow spot	M	$5\frac{5}{8}$	$3\frac{5}{8}$	$2\frac{5}{8}$	$1\frac{1}{12}$	$\frac{7}{8}$
1898.9.20.1004 coll. 20.3.1875 in immature plumage	M	$6\frac{3}{8}$	$3\frac{1}{2}$	$2\frac{7}{8}$	$1\frac{1}{12}$	$\frac{11}{12}$
1898.9.20.1005 coll. 14.9.1875 in immature plumage	M	$5\frac{5}{8}$	$3\frac{5}{8}$	$2\frac{3}{4}$	$1\frac{1}{8}$	$\frac{13}{16}$
1888.4.20.297 coll. 21.10.1874	F	$6\frac{1}{2}$	$3\frac{1}{2}$	3	$1\frac{1}{8}$	$\frac{7}{8}$
1888.5.30.298 coll. 6.12.1874* immature	M	6	$3\frac{1}{2}$	$2\frac{7}{8}$	$1\frac{1}{12}$	$\frac{3}{4}$
1888.5.30.299 coll. 5.12.1874 no yellow spot	M	$6\frac{1}{2}$	$3\frac{5}{8}$	$3\frac{1}{8}$	1	$\frac{7}{8}$
1888.5.30.300 collected ?* immature	M	$5\frac{7}{8}$	$3\frac{3}{8}$	3	1	$\frac{7}{8}$
1888.5.30.315 coll. 26.12.1874 no yellow spot	M	$6\frac{5}{8}$	$3\frac{5}{8}$	3	$1\frac{1}{16}$	$\frac{3}{4}$

(all measurements in inches)
*these specimens do not look as if they were prepared by Layard

We conclude that Warren & Harrison (1971) were correct in selecting 1898.9.20.1006 as the holotype, as it does best fit the type measurements and description of the male. However, it is worth recording that, for the description of the 'very young male', 1898.9.20.1004 is the closest to Layard's '. . . palish chocolate-brown above throughout . . . below a warm deep cinnamon-brown, with here and there a yellow feather'. Although Layard stated he had not seen a female, 1888.4.20.297—a female collected at Ovalau on 21 October 1874—looks like a Layard specimen and may have been in front of him during the composition of the type description.

Specimen 1888.5.30.270, a male in immature plumage, was collected by Layard at Levuka (on 15 August 1874) and thus can have no type status.

Three other specimens in Gadow's list are marked as having been collected in the mid-1870s (by Kleinschmidt), but they were from Viti Levu. The specimens do not look as if they were prepared by Layard, and from the locality can have no type status anyway. There is also a Kleinschmidt specimen in the Rijksmuseum van Natuurlijke Historie, Leiden, which very much has the appearance of being prepared by Layard, but it is also from Viti Levu.

Edgar Layard (1875) also described *Pachycephala torquata* (=*Pachycephala pectoralis torquata*), from specimens collected at Taviuni, Fiji. These syntypes are now in the bird collections at Tring; another syntype (T.7720) is in the Liverpool Museum. Layard (1876) also acquired a form with a narrow but perfect black neck ring from Tai Levu, on the northeast coast of Viti Levu. He named it *Pachycephala intermedia*, but it is thought to be a synonym of *P. pectoralis graeffii* Hartlaub (*P. p. optata* Hartlaub as given in Peters 1967: 30). Unfortunately the types of *intermedia* have not yet been located.

Muscicapidae/Monarchinae

Clytorhynchus vitiensis (Hartlaub, 1866).

There are two specimens of *Clytorhynchus vitiensis* in the Macleay Museum; B.7166 & B.7167 (not 77, as in Phipps' manuscript catalogue). They have no original labels, only Macleay Museum ones in Masters' hand, with the location 'Figi' [sic]. Both birds are poorly made with the bodies skewed to the left. The legs are crossed in both cases. They are probably not Layard specimens, but may well be from Charles Pearce.

	Total length	Wing	Tail	Tarsus	Bill
B.7166	$6\frac{5}{8}$	$3\frac{3}{8}$	3	$\frac{13}{16}$	$\frac{13}{16}$
B.7167	$6\frac{5}{8}$	$3\frac{3}{8}$	$3\frac{1}{4}$	$\frac{7}{8}$	$\frac{13}{16}$

(measurements in inches; both have broad whitish tips to tail feathers, somewhat frayed in B.7167)

There is a specimen of *Clytorhynchus vitiensis* at the Australian Museum (O.18687) with an original Layard label. The bird is a male collected on 11 September 1875, at Wakaia. This locality suggests the specimen is of the nominate subspecies, as are three Layard specimens with similar data in the Liverpool Museum. Layard gave names to several Fijian populations of *Clytorhynchus vitiensis*; only some of his names are presently valid. It is now extremely difficult to identify the type material used for the descriptions of these forms. We have made particular efforts to compare the two Macleay Museum specimens with all available names, and discuss their possible placement and subspecies status in the following text.

Myiolestes compressirostris Layard 1876. *Ibis* (3)6: 153, 392.
[=*Clytorhynchus vitiensis compressirostris* (Layard).]

As far as can be ascertained from Layard's comments on page 153, and his distribution list on page 392 of his *Ibis* article, the birds used for the type description were obtained from Kadavu, but not via Charles Pearce, although Pearce was at that time sending many specimens from Kadavu to Ramsay in Sydney.

Compressirostris type description measurements (converted from inches and lines):

Total length	Wing	Tail	Tarsus	Bill
$6\frac{1}{2}$	$3\frac{1}{4}$	3	$\frac{7}{8}$	1

The measurements of the Macleay Museum specimens (see above) fit fairly well (except for the bill) with the type values for *compressirostris*. The tails on both specimens indeed have a broad white band at the tip. However we consider it unlikely that the Macleay Museum specimens have any type status for *compressirostris*, and that Warren & Harrison (1971: 126) were justified in recording an adult bird at Tring (1897.6.1.625, collected by Pearce at 'Kandavu') as the holotype.

Myiolestes buensis Layard, 1876. *Ibis* (3)6: 145.
[=*Clytorhynchus vitiensis buensis* (Layard).]

Neither of the Macleay Museum specimens B.7166 or B.7167 has a red-brown tip to its tail as Layard indicated in his type description of *buensis*. Liverpool Museum has a Layard specimen from Bua, Vanua Levu (T.3353), a female collected on 7 May 1876, but this cannot have any type status for *buensis*, because Layard described it in April 1876. Warren & Harrison (1971) correct Mayr (1933: 9), who suggested that the Layard *buensis* specimens in the Natural History Museum were types—but these were also collected after the description was given.

?*Pachycephala macrorhyncha* Layard, 1875. *Proc. Zool. Soc. London*: 150.
[=*Clytorhynchus vitiensis layardi* Mayr, 1933. *Am. Mus. Novit.* 628: 9.]

Mayr formally re-named Layard's *macrorhyncha*, as it was pre-occupied, and also mentions enormous problems with Layard's description of this bird ('. . . the identity of *macrorhyncha* Layard, however can not be assured with certainty, as the type is lost . . .'). Mayr therefore not only established a new name for the subspecies but selected a new type specimen.

The two Macleay Museum specimens do not fit Layard's measurements or description for the type of *macrorhyncha*. Two *layardi* in Liverpool, T.7999 and T.3354, were collected by Layard, and thus cannot be types of *macrorhyncha*, as Layard specified that the type was collected by Lieutenant Liardet. The types are not at Tring. We conclude, as Mayr did, that the type is lost.

We do not consider, either, that the Macleay Museum specimens B.7166 and B.7167 fit Layard's type description of *fortunae*, from the Horn Islands, at all closely. From their general appearance we conclude that the two Macleay Museum specimens are most likely to be from the nominate subspecies *Clytorhynchus v. vitiensis*, and have no type status for any of Layard's names.

Lalage nigrogularis Layard, 1875. *Proc. Zool. Soc. London*: 149.
[=*Clytorhynchus nigrogularis* (Layard, 1875).]

The type is in the Natural History Museum collections at Tring (1887.12.1.1255, formerly Tweeddale Collection), and is a male collected by E. L. Layard at Levuku, Fiji, on 16 November 1874.

A specimen at the Macleay Museum (B.7168, a male from Viti Levu, Fiji) is not labelled as having been collected by E. L. Layard, and is rather poorly made. This, and the locality, confirm that this specimen has no type status for Layard's *nigrogularis*. Neither can this bird have been one of the specimens used by Ramsay for his account of *Myiolestes nigrogularis* (*Proc. Linn. Soc. N.S.W.* 1878: 12–14) which was apparently first written as an intended type description, being altered when Ramsay realised Layard had already named the bird.

Ramsay made his description from adult and immature males, from a collection 'where I also found fine specimens of *Vitia ruficapilla*' which he observed had been wrongly re-described by Finsch as *Drymochoera badiceps*. The collection Ramsay was referring to was that of the Australian Museum; the specimens he saw being A.1509 (adult), A.1508 and A.1510 (subadults), all males collected by W. J. Abbott from Upper Rewa, Fiji.

We consider that A.1509 best fits Ramsay's description of the adult of *nigrogularis*, and therefore elect this specimen as lectotype. A.1508 and A.1510 are paralectotypes. As Ramsay noted, there was at least one *Vitia* registered in the same series.

Myiolestes maxima Layard, 1876. *Ibis* (3)6: 498.
[=*Clytorhynchus nigrogularis* (Layard, 1875).]

No specimens in either the Australian or Macleay Museums appear to match the type description for this synonym. The holotype is at Tring, according to Warren & Harrison (1971: 333) a female (marked as a male) from the Seebohm Collection, collected at Kadavu 'for' E. L. Layard.

Lamprolia victoriae Finsch, 1873.

The collector of the syntype in the Australian Museum (O.18743), recorded in Longmore (1991: 18) as E. J. Layard, is here corrected to E. L. Layard.

Rhypidura personata Ramsay, 1876. *Proc. Linn. Soc. N.S.W.* 1: 43.
[=*Rhipidura personata* (Ramsay, 1876).]

The types of *personata* were said by Ramsay to be one of the new species discovered by Charles Pearce. However, of three possible types in the Macleay Museum, two look much like other Pearce specimens, but the third (B.7103) was unmistakably prepared by Edgar Layard.

	Total length	Wing	Tail	Tarsus	Bill from forehead	Bill from gape	Bill from nostril
Type description	6.2	3.2	3.75	0.4	0.4	0.55	0.3
B.7094 (male)	6.2	3.25	3.3	0.8	0.55	0.55	0.3
B.7095 (labelled female)	6.0	3.25	3.95	0.75	0.55	0.55	0.3
B.7103 (labelled male)	6.05	3.25	3.8	0.75	0.55	0.60	0.3

(all measurements in inches)

The tarsus measurement has been re-checked, and we can only conclude that Ramsay, or the printers, made a mistake in the transcription of this value.

B.7103 must be a Layard specimen, with its uncrossed legs splayed out from the ankle and neat shape. Although labelled a male, it best fits Ramsay's description of the female—presenting more of an olive-brown colour on the flanks and underside. The bill is somewhat darker than those of B.7094 and B.7095, but compares well with Ramsay's description. The other two specimens appear very similar to each other in plumage colour.

B.7094 & B.7095 are not particularly well-made specimens and both have crossed legs. They were probably collected by Charles Pearce. Both match the type description except that the specimen marked as a female (B.7095) does *not* seem to have a 'greater extent of olive-brown on the flanks and sides'. We consider it possible that the labels on B.7103 and B.7095 have been inadvertently switched.

Ramsay stated in his type description that this new species was discovered in Kandavu (=Kadavu), Fiji, by Charles Pearce, and that the specimens were in the Macleay collections (then at Elizabeth Bay). He must not have realised that one of the three was a Layard specimen.

We elect B.7094 the lectotype, a bird both labelled and in appearance a male, and collected by Charles Pearce (as stated by Ramsay). B.7095 (probably a male) and B.7103 (probably a female) are paralectotypes.

Meliphagidae

Ptilotis provocator Layard, 1875. *Proc. Zool. Soc. London*: 28.
[=*Xanthotis provocator* (Layard, 1875).]

The Macleay Museum has two specimens (marked male and female) of this species, in nice condition with uncrossed legs splayed from the ankle in typical Edgar Layard style. They were both collected at Kandavu (=Kadavu), but unfortunately have no collecting dates.

Are both Macleay Museum specimens in fact females? (see measurements below). Clunie & Morse (1984) state that the male is usually bigger, but give the measurements as ranging from 18 to 20 cm ($7\frac{1}{5}$ to 8 inches). Watling (1982) gives a measurement of 19 cm ($7\frac{5}{8}$ inches), presumably for the male. He states that the female is 'considerably smaller'. Layard in his type description remarked when describing the female that '. . . above all she differs remarkably in size . . .', and in fact most of his specimens bear this out. However, the birds from the *Challenger* series of *Ptilotis provocator* in the Natural History Museum collections at Tring do not seem to show much difference in size between male and female. The *Challenger* account (see Sclater 1881: 48) indeed states that 'The sexes are alike'.

Challenger material, measurements (in inches):

	Total length	Wing	Tail	Tarsus	Bill
NMH 80.11.18.206 (M, Challenger No. 65[1]	$7\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{16}$
NHM 80.11.18.208 (M, Challenger No. 67)	$8\frac{3}{8}$	$4\frac{1}{4}$	$3\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{16}$
NHM 80.11.18.209 (M, Challenger No. 68)	$7\frac{1}{4}$ (bent)	4	$3\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{16}$
NHM 80.11.18.211 (M Imm[2], Challenger No. 84[1])	$6\frac{3}{4}$	$3\frac{1}{4}$	3	$1\frac{1}{4}$	1
NHM 'Duplicate' (M, Challenger No. 111)	$7\frac{1}{16}$	$3\frac{7}{8}$	$3\frac{1}{8}$	$1\frac{3}{16}$	1
NHM 80.11.18.207 (F, Challenger No. 66)	$7\frac{9}{16}$	$3\frac{7}{8}$	$3\frac{1}{4}$ (broken)	$1\frac{1}{8}$	$1\frac{1}{16}$
NHM 80.11.18.210 (F[3], Challenger No. 83)	$6\frac{5}{8}$	$3\frac{1}{2}$	3	$1\frac{1}{16}$	1
NHM 'Duplicate' (F, Challenger No. 106)	$7\frac{1}{2}$	$4\frac{1}{4}$	$3\frac{5}{8}$	$1\frac{3}{16}$	$1\frac{1}{16}$

[1] marked as figured in 'Voyage of the *Challenger, Aves*')
[2] marked as female in *Challenger* account)
[3] marked as male in *Challenger* account)

The *Challenger* material was the first series of *Xanthotis provocator* to be collected. During a stop at Levuku (on the main island of Viti Levu) between 28 July and 1 August 1874 (Spry 1876), the ship's naturalists showed Layard several specimens (probably six) collected from Kadavu between 25 and 27 July. We assume that these *Challenger* specimens had been fully prepared as skins by the time the *Challenger*'s crew met Layard. Of the Challenger material at Tring, only the last, 'Duplicate' female (Challenger No. 106) appears to be made up in Layard's style, with splayed legs, and this can be explained with reference to Sclater 1881: 47, where it is recorded as having been 'shot August 6'.

The *Challenger* returned to Kadavu from Levuku on 3 August (leaving again on 10 August, according to Spry 1876: 386), and it appears from No. 106, and Layard's own specimens collected on 4 and 5 August 1874, that he had begged a lift from them in order to collect the bird for himself. Challenger No. 111, which is also marked as a 'Duplicate', may also be from this second visit of the ship to Kadavu, and both skins could therefore have been prepared and, moreover, collected by Layard. Indeed, they may have type status.

The date at the end of Layard's type description (1875: 30) is 6 September 1874, so no bird collected after that date can have type status. He mentions obtaining a total of seven specimens at 'Kandavu', two being females. This series must include the four Layard specimens at Tring collected in August 1874, and a Layard specimen at Liverpool Museum received via the Tweeddale Collection and collected on 5 August 1874.

The two birds in the Macleay Museum are also candidates to make up the set of seven that Layard mentions in his type description. However, this joint museums' list would include four birds where the measurement of total length is close to that which Layard gives for the female ($6\frac{1}{4}$ inches), but he clearly stated he had 'seven specimens, [only] two of which were females'. The type status of the two undated Macleay Museum specimens, both $6\frac{1}{2}$ inches in length, must therefore remain uncertain, and it is possible instead that the two 'duplicates' in the Challenger Collection (Nos. 106 and 111) comprise the sixth and seventh specimens in front of Layard during his type description; both are measured at over 7 inches, although No. 106 is recorded as a female.

Warren & Harrison (1971) elected a male bird in the Tring collections (1877.11.17.76, collected at Kandavu (=Kadavu) on 4 August 1874) as the holotype. We consider that the Tring male 1888.7.1.825 (received via the Tweeddale Collection) in fact fits the type measurements better; the Liverpool bird is also very close. The Tring female bird 1877.11.17.75 is the best match for Layard's measurements of the type female. It is noted that Wagstaffe (1978) measured the tail of the Liverpool bird inaccurately at 81 mm ($3\frac{1}{4}$ inches). Wagstaffe also wrongly stated that the Liverpool specimen and one at Tring (presumably Warren & Harrison's type) were all that could be traced out of Layard's original seven specimens.

	Total length	Wing	Tail	Tarsus	Bill
Type description Male*	$7\frac{1}{4}$	4	$3\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{1}{16}$
Type description Female*	$6\frac{1}{4}$	$3\frac{1}{2}$	$2\frac{15}{16}$	$\frac{15}{16}$	$\frac{15}{16}$
NHM 1877.11.17.76 M, coll. 4.8.1874	$7\frac{15}{16}$	4	$3\frac{7}{8}$	$1\frac{3}{8}$	$1\frac{1}{8}$
NHM 1888.7.1.825 M, coll. 5.8.1874	$7\frac{3}{8}$	$4\frac{1}{4}$	$3\frac{1}{2}$	$1\frac{3}{16}$	$1\frac{1}{16}$
NHM 1877.11.17.75 F, coll. 4.8.1874	$6\frac{1}{4}$	$3\frac{1}{2}$	$2\frac{3}{4}$	$1\frac{1}{8}$	$\frac{15}{16}$
NHM 1888.7.1.826 F, coll. 5.8.1874	$6\frac{1}{4}$	$3\frac{3}{8}$	$2\frac{3}{4}$	$1\frac{1}{4}$	1
Liverpool T.10266 M, coll. 5.8.1874	$7\frac{3}{8}$	4	$3\frac{5}{8}$	$1\frac{1}{4}$	$1\frac{1}{16}$
Macleay B.2667 (M)	$6\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{7}{16}$	1	1
Macleay B.2668 (F)	$6\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{5}{16}$	$1\frac{1}{8}$	1
NHM 1898.9.30.43 M, collected Sept. 1875 (therefore no type status)	$7\frac{1}{12}$	$4\frac{1}{16}$	$3\frac{5}{8}$	$1\frac{1}{4}$	1

*converted from inches and lines
(all measurements in inches)

Note that the Natural History Museum's 1888.7.1.825 & 826 were received via the Tweeddale Collection and so postdate Gadow's list (1884:231).

Sturnidae

Aplonis vitiensis Layard, 1876. *Proc. Zool. Soc. London*: 499, 502. [=*Aplonis tabuensis vitiensis* Layard, 1876.]

The manuscript for the type description was received by the editors in London on 24 May 1876, so two of the four *vitiensis* specimens from Fiji in the Macleay Museum cannot be types (B.543, collected 3 April 1876 and B.545, collected 24 May 1876, both by Edgar Layard). However, B.542 and B.544 have no collecting dates, and so are at least eligible for type status. Both are typical of Edgar Layard's preparation style; nice, rounded skins with uncrossed legs, but they have no original labels.

Warren & Harrison (1971) record that several syntypes of *vitiensis* are in the Natural History Museum at Tring, but they only mention one in detail, a female collected at Wakaia. Their statement that 'the described male, from Taviuni, cannot be traced' must refer to the Register entry for No. 1898.11.10.164, 'type'; the bird is not now in the collections. There is no amendment to the Register entry to explain its disappearance.

Six Layard specimens were recorded as being in the Natural History Museum collections by Bowdler Sharpe (1890: 132), although some of these do now appear to be missing (see below). The Wakaia specimen came to the Natural History Museum via the Seebohm Bequest after Bowdler Sharpe's account was published, as did the missing Taviuni male 1898.11.10.164.

The following syntypes of *Aplonis vitiensis* were found to be extant in the collections at Tring in December 1994:

Tweeddale Collection

1888.9.20.258. Male. Loma Loma, 3 December 1875 (.458 in Register).

1888.9.20.254. Male. Ovalau, 23 November 1874 (.454 and 23 July in Register).

1888.9.20.255. Male. Levuka, 3 July 1874 (.455 in Register).

Seebohm Collection

1898.11.10.165. Female, collected Wakaia 13 September 1875.

Confusingly, the accession numbers on the labels of the Tweeddale specimens are not the same as those given in the Register, and there are also some discrepancies in the collecting dates given. According to the Register, there were originally seven Layard specimens of *vitiensis* in the Tweeddale Collection (1888.9.20.453–459). One, now missing, was collected in Tonga in 1876. Those which probably had type status, but appear to now be also missing, are a female from Ovalau collected on 15 May 1875, an adult from Rewa (collected 10 October 1874) and a second male from Loma Loma collected on 3 December 1875 (Michael Walters, pers. comm. December 1994).

No measurements and very meagre details of plumage were given in Layard's type description, so the exact matching of specimens to the description is impossible. Nevertheless, we conclude that the Macleay Museum specimens B.542 and B.544 are in the same syntypic series for *Aplonis vitiensis* as those listed above from the Natural History Museum collections at Tring.

Three Layard specimens of *vitiensis* in the Liverpool Museum from Fiji were all collected in 1876, and therefore can have no type status. Also without such status is another specimen at Tring with an original Layard label, but which came to the Natural History Museum collections at the late date of 1969 via the Hewitt Collection. It was collected at Rewa, Fiji, in 1876.

Acknowledgements

C.T.F. was able to visit Australia to undertake this, and other, research through the award of the 1994 Macleay Miklouho-Maclay Fellowship of the University of Sydney. She would like to thank the Trustees of the Fellowship and staff of the Macleay Museum, the University of Sydney, for their assistance, both financial and logistic, and to the National Museums and Galleries on Merseyside, U.K., for allowing her three months research leave to the Macleay Museum.

We are both very grateful to Harold G. Cogger of the Australian Museum, and an I.C.Z.N. committee member, for advice on revisionary taxonomy procedures; and to Michael Walters, of the Natural History Museum, Tring, who has been most helpful in checking registers and specimens.

We would like to thank Walter Boles and Peter Rowland of the Australian Museum, Stuart Norrington of the Macleay Museum, Effie Warr of the Natural History Museum, Tring, and Tony Parker of the Liverpool Museum, National Museums & Galleries on Merseyside, for all their assistance.

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IN BRIEF

WHY THE NEOTROPICAL GUANS WERE NAMED *PENELOPE*

Generic names of Neotropical Cracidae refer to early Spanish or South American Indian designations or to notable anatomical details, habitat, habits and vocalisations of the different species. An exception is the name *Penelope*, present in the ornithological literature since the earliest times (*apud* Aldrovandi 1636), the origin of which remains obscure, as apparently there is no reason for bestowing the name of a Greek princess, daughter of Icarius with the nymph Peribea and wife of Ulysses, King of Ithaca, on the Neotropical guans (Jobling 1991). Although the Penelope myth is connected with birds, the available references always involve ducks or geese (Anatidae), which bear no relation or similarity to New World Cracidae. To give an example, Pausanias, Apollodorus and Tzetes establish that Icarius' daughter, originally known as Arnea (ewe) or Arnacia (the flabby skin of an ewe), was re-named Penelope after being rescued from the sea by a flock of "streaked ducks" (penelops in Greek; see also Carnoy 1976), while the Odyssey mentions that Penelope was cheered in Ulysses' absence by the sight of her flock of twenty geese which she kept in the house. However, the legend also includes some very little known and even unusual aspects which seem to justify the peculiar choice of this name for a bird such as a guan.

Contrary to the Homeric Odyssey, Penelope was considered not a symbol of fidelity but a lascivious adultress by some classical authors. According to these sources, she gave birth to the Arcadian god Pan after maintaining promiscuous relations with all the local nobles who wanted her to remarry during Ulysses' absence. On the other hand, another legend states that Icarius' daughter covered her face with a veil to demonstrate the decision to follow Ulysses to Ithaca after his marriage (Kury 1992), a detail which could explain that one of the possible translations of Penelope is "with a spider-net over the face" (Graves 1985). Thus, it is not surprising to learn that the maenads, a group of orgiastic priestesses who followed Pan and Dionysus, were sometimes figured with their arms and face adorned with a reticular painting. This close relation with Pan and some other contradictions suggest that the Odyssean Penelope and the cult of a local nymph of the same name were merged in a single tale by various authors such as Ovid, Herodotus and Plutarch.

The image of a woman adorned with a contrasting reticular painting may easily be associated with Neotropical guans, as these Cracids have the feathers of foreneck and breast bordered with whitish giving a scaled appearance. In several species, e.g. the Dusky-legged Guan *Penelope obscura* Temminck, 1815 and the Rusty-margined Guan *Penelope superciliaris* Temminck, 1815, these marks are very conspicuous, and the birds seem to be covered by a netlike veil of whitish stripes. This kind of pattern might well suggest a mythological figure whose name is related to a reticulate woof, as may also be observed in some pictures of the maenads.

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21 April 1995

A FIFTH SPECIMEN OF THE TAHITI PARAKEET

The Tahiti Parakeet *Cyanoramphus zealandicus* (Latham, 1790) was a small, drab parrot which was probably endemic in Tahiti. It seemed never to have been numerous, and disappeared by the middle of the nineteenth century. Only four specimens of it were known until now, three in Britain and one in France. Two of the British specimens, one of which is the presumed type, are in the Merseyside County Museum, and the third in the Natural History Museum (Tring); all of them were brought back by the naturalists who accompanied Captain Cook, in the eighteenth century. The French specimen is kept in the Muséum National d'Histoire Naturelle (Paris). It is one of three specimens collected in 1844 by Lieutenant J. de Marolles, and nothing is known of what happened to the two others (Greenway 1958, Jouanin 1962, Fuller 1987, Forshaw 1989, Knox & Walters 1994).

The specimen discovered by one of us (D.M.) in the collections of the Muséum d'Histoire Naturelle de Perpignan (France) (Voisin *et al.* 1995) has certainly nothing to do with de Marolle's birds, as it was collected two years earlier by G. Amadis, who, as a member of the expedition of the French Frigate "la Vénus", under the command of Admiral A. A. Dupetit-Thouars, stayed in Tahiti in 1842. This fifth specimen is in very good condition with its colours still fresh; its rather worn rectrices suggest that it was kept in a cage for some time. Its measurements are: culmen 19.5 mm, tarsus 22.5 mm, wing *c.* 140 mm (approximate measurement in order not to damage the specimen). There is no indication of locality or date on the stand, but from the Catalogues we know that this specimen entered the Muséum in 1845, probably in late September or early October.

We are glad to thank here the Association des Amis du Muséum, who kindly funded the visit of C. and J.-F. Voisin to Perpignan, as well as Prof. R. Bourgat, Curator of the Muséum d'Histoire Naturelle of that town, and his staff for their warm reception and facilities to work.

References:
Forshaw, J. M. 1989. *Parrots of the World*. 3rd edn. Willoughby, Lansdowne.
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Greenway, J. C. 1958. *Extinct and Vanishing Birds of the World.* American Committee for International Wildlife Protection, New York.

Jouanin, Chr. 1962. Inventaire des oiseaux éteints ou en voie de d'extinction conservés au Muséum de Paris. *Terre et Vie* 3: 257–301.

Knox, A. G. & Walters, M. P. 1994. Extinct and endangered birds in the collections of the Natural History Museum. *Brit. Orn. Club. Occ. Pub. 1.*

Voisin, C., Voisin, J.-F. & Mary, D. 1995. La collection d'oiseaux du Muséum d'Histoire Naturelle de Perpignan, première partie. *Ann. Mus. Hist. Nat. Perpignan* 5: 33–44.

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DIDIER MARY

21 May 1995

BOOKS RECEIVED

del Hoyo, J., Elliott, A. & Sargatal, J. (eds) 1994. *Handbook of the Birds of the World.* Vol. 2, New World Vultures to Guineafowl. Pp. 640, 60 colour plates, 302 photographs, 590 distribution maps, more than 7000 bibliographical references. ISBN 84-87334-15-6. Lynx Edicions, Barcelona. £98. 31 × 24 cm.

This magnificantly presented volume forms the second part of a series prepared in collaboration with BirdLife International (previously ICBP). The series is now expected to extend to twelve volumes, following a comprehensive revision of the whole project and taking into account experience gained from Vol. 1 (reviewed in *Bull. Brit. Orn. Club* 1993 (2)). The principal object of HBW, as it has come to be referred to, is stated to be the maximum exchange of ornithological information without attempting to adjudicate between the scientific merits of different avian classifications. In this it succeeds admirably.

A 6-page introduction follows the Foreword by Walter J. Bock, participating in the capacity of Consultant for Systematics and Nomenclature, an important innovation in Vol. 2. The detailed general introduction to the whole series (pp. 15–33 of Vol. 1) is not repeated as the treatment is essentially the same and will remain so throughout the series. Other important innovations have occurred in Vol. 2, the most significant being extensive internationalisation of the team of authors.

Taxonomy is considered to be one of the major concerns of the whole project. As explained in Vol. 1, HBW follows, for its basic overriding principle of covering all living species rather than all recent species, the currently accepted standard sequence of the Class Aves (Mayr & Bock) with limited modification where recent work shows it to be appropriate. Hence, although New World Vultures (Cathartidae) are now generally reckoned to be allied to the Storks (Ciconiidae), they are treated traditionally within Falconiformes although discussed fully in the family text. On the other hand, New World Quails are given fully family status, with the recognition of a narrower concept of the Phasianidae. The Hoatzin presents a difficult case, being placed in an order of its own, Opisthocomiformes, alongside the Galliformes. Of interest is the inclusion of a newly described African perdicine, *Xenoperdix udzungwensis*, so distinctive as to have been placed in a genus of its own.

Retaining the general style and layout of Vol. 1, the family accounts deal with general aspects under the headings: Summary Box, Systematics, Morphological Aspects, Habitat, General Habits, Voice, Food and Feeding, Breeding, Movements, Relationship with Man, Status and Conservation, General Bibliography. The species accounts follow under the headings: Taxonomy, Subspecies and Distribution, Descriptive Notes, Habitat, Food and Feeding, Breeding, Movements, Status and Conservation, Bibliography. Species names are also listed in English, French, German and Spanish (publication of vernacular Spanish names is now underway; a comprehensive list of French names has recently been published). In addition to the IUCN threat category, a new Mace-Lande category is included for each species account for the families Megapodiidae, Odontophoridae, Phasianidae and Numididae. All CITES species are so indicated in the status and conservation sections of the respective species accounts.

Another important innovation in Vol. 2 is the participation of several prestigious British artists in addition to the successful Vol. 1 team. The workload for this and subsequent volumes has required a larger team of artists to ensure that deadlines are met without work being rushed. HBW states that it does not aim to serve as a fieldguide (even for those capable of carrying 12 large volumes in the field!), although some of the more poorly known species not particularly well served by present fieldguides are permitted a more detailed treatment. As in Vol. 1, the distribution maps do not normally include a species' introduced range. The extensive bibliography consists of that listed at the end of the relevant species account in addition to that of the general bibliography. Vol. 2 acknowledges that once again museums have played an important part in many aspects of the project. Visits to collections of live birds are recognised to have helped especially in the preparation of the colour plates.

Weighing in at a generous 3.6 kg (similar to Vol. 1) this Volume maintains a magnificent standard in relation to the declared aims of maximum exchange of ornithological information, readability and illustration of all the world's living bird species and subspecies. It is sincerely hoped that the remaining volumes will be published at intervals not exceeding that between the first two volumes. Lynx Edicions titles may be purchased from specialised bookshops or directly from the publishers: Lynx Edicions, Passeig de Gracia 12, 08007 Barcelona, Spain. Tel: 93-301 07 77: Fax 93-302 14 75.

S. J. F.

Chantler, P. & Driessens, G. 1995. *Swifts: a guide to the swifts and treeswifts of the world.* Pp. 237, 24 colour plates, 62 text-figures, maps. ISBN 1-873403-31-3. Pica Press. £26. 25 × 17 cm

This guide tackles one of the most difficult families. Inevitably, identification has to be the main problem discussed and, if possible elucidated; consequently, for many species Identification and Description are the longest sections of text; and help in distinguishing between very similar-looking species is a main aim of the plates, supplemented by useful text-figures dealing with details of plumage, wing- and tail-shape etc. Author and artist (Driessens) are probably better qualified than anyone for making a success of such a challenge, and they have produced an impressive book, which will undoubtedly be put to the test by birdwatchers visiting little known areas where a variety of swift species may be found. A great deal of trouble has been taken to consult authorities on particular species and areas in order to produce species accounts, and distribution maps, that are as accurate and up-to-date as possible.

In the case of many guides to bird families, for the travelling ornithologist one cannot see them replacing regional field guides, which adequately deal with identification problems of whole avifaunas; but those visiting parts of tropical America, Africa or Asia will need to add this guide to their luggage.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the Editor, Dr D. W. Snow, The Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*.

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Correspondence on all other matters should go to the Hon. Secretary, Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K. For details of Club Meetings see inside front cover.

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Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

Dr D. W. SNOW

Volume 115
1995

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J. O. H. Small
A. Spitznagel
C. W. R. Storey
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Dr. J. Watson
D. Winstell

Deaths. It is with great regret that we record the deaths of the following Members, since the last List of Members was published: W. G. Harper, I. McNamee, A. G. Moore, A. D. Tomlins and Dr W. B. Quay (in 1995); also K. W. Henshall and Sir William Wilkinson (in 1996).

Resignations in 1995/1996 (2 in 1996, as shown in **bold**)
T. L. Crilley, L. H. Ennis, D. M. Frusher, Mrs B. P. Hall, J. A. Hancock, Dr F. Hiraldo, A. J Holcombe, M.T. Horwood, Dr. J. K. Irons, R. M. Laing, Capt. G. C. Lloyd, r.n, I. McNamee, P. Meeth, B. Nattress, **R. A. Newland, P. Pålsson,** V. J. Sawle, C. D. Scharfenberg, D. Tutt and A. P. Ziegler. (20)

Removed from membership under Rule (7) – 1995
E. W. Baker, P. C. Cannings-Bushell, Dr Marion Cook, R. Dobbins, Dr V. Goutner, Miss I. Hertzler, P. P. Jennings, Dr P. B. Kasoma, C. Reese Lind, J. S. Lyes, A. H. McNeil, D. T. Miles, A. Onrubia-Baticon, R. W. Reed, G. Z. Rowe, Dr R. R. Snell, Tian Sin Tan, A. Turner, Fox Kai-on Wang, I. Williams, H. M. V. Wilson and Dr J. D. Wilson. (22)

New Members 1996 (23)

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1996

(Updated from information available as at **31 July 1996**).

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LIST OF AUTHORS AND CONTENTS

INDEX TO SCIENTIFIC NAMES

(Compiled by Mary N. Muller)

All generic and specific names (of birds only) are indexed. New subspecific names are indexed in bold print under generic, specific and subspecific names.

CORRECTIONS TO TEXT

Page 41 line 48 *Macheiramphus* not *Machaeramphus*
Page 58 line 1 *Macronectes* not *Macroneetes*
Page 125 line 26 *Rynchops niger* not *Rhynchops nigra*
Page 158 line 18 *Accipiter* not *Accipitus*
Page 162 line 12 *aurantioatrocristatus* not *aurantiatrocristatus*
Page 179 line 22 *dominicensis* not *dominicanus*

Printed in Great Britain by Henry Ling Ltd, at the Dorset Press, Dorchester, Dorset

ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 116 No. 1 March 1996

FORTHCOMING MEETINGS

Tuesday, 23 April 1996. David Fisher will speak on **"Birds of Mongolia"**. David has led ornithological tours to many countries, and has a wide and detailed field knowledge of birds in all five continents. His programmed talk last July had to be postponed due to the transport strike.

Applications to the Hon. Secretary, Michael Casement (see address below), by 9 April, please.

Tuesday, 21 May 1996. ANNUAL GENERAL MEETING at 6 p.m., followed by **Dr Barry (Baz) Hughes** speaking on **"Ruddy Ducks in Europe"**. Baz obtained his Ph.D. on Ruddy Ducks, and spent five years studying their behaviour before embarking on research into control measures. He is acting Head of the Wildfowl & Wetlands Trust (WWT) Threatened Species Unit, studying the threat to the White-headed Duck, and other species.

Applications to the Hon. Secretary by 7 May, please.

Tuesday, 18 June 1996. Paul Goriup, of BirdLife International, and Chairman of the Steppe and Grasslands Bird Group, will speak on **"The Beauty of Bustards".**

Applications to the Hon. Secretary by 4 June, please.

Tuesday, 16 July 1996. Dr Roger Wilkinson will speak on **"Zoo breeding programmes for endangered species".** Having spent six years in Nigeria, teaching and research at Bayero University, Kano, he is now Curator of Birds at Chester Zoo, and Secretary of the West African Ornithological Society.

Applications to the Hon. Secretary by 2 July, please.

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London SW7, at 6.15 p.m. for 7 p.m. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from 6.15, and a buffet supper, of two courses followed by coffee, is served from about 7.00. (A vegetarian menu can be arranged if ordered at the time of booking.) Informal talks are given on completion.

Overseas Members visiting Britain are particularly welcome at meetings. For details in advance, please contact the Hon. Secretary: Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA.

Tel/Fax: 01730-825280 for late bookings and cancellations.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 116 No. 1 Published 29 March 1996

REPORT OF THE COMMITTEE FOR 1995

Meetings. Eight evening meetings were held in 1995, five in the Ante-room, three in the Senior Common Room, of the Sherfield Building at Imperial College, London. A ninth meeting, arranged for July, had to be cancelled at the last moment because of a transport strike.

The programme of speakers during the year again covered a wide variety of ornithological topics and was presented by expert speakers both from Britain and from overseas.

A total of 337 members and guests attended the meetings, which is less than the total attendance in recent years, but the attendance at each meeting was well up to that of meetings of the last 10 years.

Publication Fund. A most generous donation was received from Dr J. F. Monk for the establishment of a Publications Fund for the benefit of Club publications other than the *Bulletin*. The Fund was set up in May and is open for further donations from members.

Committee. The Committee met 7 times during the year and the attendance was 87%. The Sub-committee set up to appraise the submissions which had been received for publication by the Club in the *Occasional Publications* series reported back to the Committee in April. The recommendations for the publication of 2 of the submissions were accepted, subject to editorial and financial considerations, and it is hoped that publication of Mikhailov's *SEM Egg-shell Atlas* and the *Proceedings of the Joint Meeting of the Linnean Society and the British Ornithologists' Club* in March 1996 will be published in the next 24 months. The Committee is very grateful to the Sub-committee, Dr Robert Cheke, Dr David Snow, Dr Andrew Gosler and Dr Robert Prŷs-Jones, for the considerable time and care which they devoted to their task. The Trustees of the Herbert Stevens Fund met with the Committee in March to report on the performance of the Fund. The Committee is most grateful to Mr Nigel Crocker, Mr Richard Price and Mr Peter Oliver who have continued their careful trusteeship.

Mr Stone has continued with the work of collating and cataloguing the archive material in preparation for placing it in The Natural History Museum.

It is with very great regret that the Committee reports the deaths in the past year of W. G. Harper (Member 1979–1995), I. McNamee (Member 1992–1995), A. G. Moore (Member 1978–1995), Dr W. B. Quay (Member 1982–1995) and A. D. Tomlins (Member 1989–1995).

Membership. There were 550 paid up members at 31 December 1995. 327 members have addresses within the U.K. and 223 overseas.

Recruitment from the newly-elected members of the Union continued during the year.

Bulletin. Volume 115 consisted of 264 pages, and contained 43 main papers and 12 shorter (In Brief) contributions. Papers included descriptions of three new species and 13 new subspecies. The new species comprised a Neotropical flycatcher from a difficult and poorly known genus; a rather distinct Amazonian woodcreeper; and a shearwater from the Indian Ocean. New distributional data were published for Cameroon, Mexico and several South American countries, including a report on the occurrence of the American Dipper in Venezuela, far from its hitherto known range. Among papers of special interest may be mentioned accounts of the first breeding record of the Red-billed Tropicbird in Europe; the first capture (and release) of a live Madagascar Serpent-eagle; and a re-examination, with new distributional records, of the bowerbird genus *Archboldia*, clearing up confusion about its bower and showing that it consists of a single species. There were several papers devoted to correcting false or disputed points of nomenclature and taxonomy. The 88 authors were from 20 countries and 6 continents.

The Club gratefully acknowledges sponsorship towards the cost of plates in *Volume 115*.

The Committee is most grateful to Mrs Mary M. Muller who has compiled the *Index* to the *Bulletin*. She continues to undertake this exacting task which she has done for the past 5 years.

The Committee is also most grateful to Mrs F. E. Warr who has kindly continued to look after the stock of back-numbers of the *Bulletin* and the supply of separates to current authors.

Bulletin Sales. Non-member Subscribers were 134 in the U.K. and 117 overseas.

Finance. Total investment income continued to accrue as anticipated, providing a similar amount of income to that from subscriptions. A steady income was received from the sales of publications and goods.

The greater part of expenditure related to production of the *Bulletin* although some reduction has been made in typesetting costs. General Committee administration costs have been restrained to those of recent years. In 1995 reimbursement was made of the whole of the interest-free loan received from the Bird Exploration Fund in 1994 towards the costs of production of *Extinct and Endangered Birds*.

The charges made to the Club by Imperial College for meetings continued to rise at more than the rate of inflation and the charge to members attending meetings has had to be increased.

The steadily rising costs of the production of the *Bulletin*, particularly the recent steep increase in the price of paper, have made it necessary to raise the Non-member subscription rate from 1996 and will affect the level of all subscriptions from 1997 onwards.

The Accounts for 1995, which are not yet available, will be tabled at the Annual General Meeting and published subsequently in the *Bulletin*. Members wishing to have copies before the Annual General Meeting are asked to apply to the Honorary Treasurer.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club will be held in the Ante-room of the Sherfield Building, Imperial College, London SW7 at 6 p.m. on Tuesday, 21 May 1996.

AGENDA

1. Minutes of the 1995 Annual General Meeting (see *Bull. Brit. Orn. Cl.* 115: 137).
2. Report of the Committee and Accounts for 1995.
3. The *Bulletin*.
4. The election of Officers. The Committee proposes that:
    (i) Mr S. J. Farnsworth be re-elected Honorary Treasurer.
    (ii) Commander M. B. Casement, OBE, RN, be re-elected Honorary Secretary.
5. The Editor. On advice received from the Charity Commissioners, and in order that the Editor remain eligible to receive an honorarium, the Committee proposes that:
    (i) The Editor shall cease to be a Trustee of the Club.
    (ii) The Editor shall attend Committee meetings as necessary to give advice on matters concerning the *Bulletin*, but without the right to vote on any issue.
    (iii) Rule (4) be amended accordingly.
6. Any other business of which notice shall have been given in accordance with Rule (12).

By Order of the Committee
Michael Casement, *Honorary Secretary*

The eight hundred and fifty-third meeting of the Club was held on Tuesday, 14 November 1995, at 6.15 p.m. 26 Members and 7 Guests attended.

Members attending were: D. Griffin (*Chairman*), Dr T. J. Roberts (*Speaker*), M. Adcock, Miss H. Baker, P. J. Belman, P. J. Bull, D. R. Calder, Cdr. M. B. Casement RN, S. J. Farnsworth, G. D. Field, F. M. Gauntlett, The Rev. T. W. Gladwin, C. A. R. Helm, R. Kettle, N. S. Malcolm, Dr C. Mann, Dr J. F. Monk, D. J. Montier, Mrs A. M. Moore, Mrs M. Muller, R. E. F. Peal, Dr R. Prŷs-Jones, R. E. Sharland, S. A. H. Statham, N. H. F. Stone, Professor W. E. Waters.

Guests attending were: Mrs J. Bull, Mrs F. Farnsworth, Mrs M. H. Gauntlett, Mrs J. M. Gladwin, Mrs M. Montier, P. J. Moore, J. Phillips.

Dr T. J. Roberts spoke after supper on "Birds of the Himalaya", illustrating it with slides of habitat and typical bird species. Dr Roberts has sent the following summary of his talk.

The Himalaya stretches west to east over 2500 km, traversing seven countries, and has a varied and complex avifauna with Oriental and Palearctic elements. This reflects past major geophysical events and the current influence of altitude and longitude. The continent of Gondwanaland, colliding with the Asian landmass, is thought to have established a land bridge first in the northeastern corner adjoining present day Chinese Sichuan. Hence the greater variety of typically Oriental species in the northeast of the sub-continent. Subsequent periods of "warming up" during the Pleistocene enabled the Himalaya to act as a refuge for less heat-tolerant Palearctic species, which have influenced the West Himalayan fauna, with 3 species of *Aegithalos* long-tailed tits and 15 *Phylloscopus* warblers breeding.

The Himalaya may be divided into 5 different zones. The first is a foothill, subtropical zone with predominantly deciduous trees, occurring at 400–1200 m. Here Oriental species predominate, including barbets, orioles, *Picoides* "ladder-back" woodpeckers, drongoes, scimitar babblers and flycatcher warblers. The second is a true mountain zone with moist temperate climate and varying from 1800–1200 m up to the limit of tree growth. Here deciduous forest gradually gives way to coniferous. Here are found 5 *Cuculus* species, 7 *Dendrocopos* woodpeckers, and most of the babblers and *Garrulax* laughing thrushes, as well as the many beautiful pheasants, confined to the Himalaya.

The third is a moist alpine zone, occurring from 3200–5100 m up to the permanent snow line. Sufficient rainfall in summer provides cover for ground-nesting birds. Besides the spectacular Monal Pheasant and Lammergeier, this region is the breeding ground of accentors, *Luscinia* bush-chats, redstarts, Citrine Wagtails, and both species of choughs. The fourth zone comprises the major valleys, some of which penetrate up to 300 miles into the northern ranges. Human settlement in the valley bottom provides habitat for Golden Orioles, Hoopoes, Brahminy Mynas, Wrynecks, the Eurasian Bee-eater, and Long-tailed Shrike. The fifth zone includes the far north, characterised by the greatest concentration of high peaks, but a cold desert climate offering harsh conditions for a restricted avifauna, typical examples being the Tibetan and Himalayan Snowcocks, the Bar-headed Goose, Ibisbill, as well as the Alpine and Brown Accentor, high altitude redstarts, wheatears and rock thrushes, and the endemic *Leucosticte* snow finches.

The eight hundred and fifty-fourth meeting of the Club was held in the Ante-room of the Sherfield Building at Imperial College on Tuesday, 12 December 1995, at 6.15 p.m. 32 Members and 9 guests attended.

Members attending were: The Reverend T. W. GLADWIN (*in the Chair*), R. P. MARTINS (*Speaker*), M. A. ADCOCK, Dr J. S. ASH, Miss H. BAKER, P. J. BELMAN, Dr K. B. BRIGGS, Professor R. J. CHANDLER, Cdr. M. B. CASEMENT RN, Dr R. A. CHEKE, S. J. FARNSWORTH, C. A. R. HELM, S. HOWE, M. C. JENNINGS, R. KETTLE, Dr C. F. MANN, J. MISKELL, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, R. E. F. PEAL, R. C. PRICE, Dr R. PRŶS-JONES, N. REDMAN, Dr C. RYALL, S. J. R. RUMSEY, P. J. SELLAR, Dr D. W. SNOW, N. H. F. STONE, Dr D. H. THOMAS, M. P. WALTERS, Mrs F. E. WARR.

Guests attending were: Mrs F. M. FARNSWORTH, Mrs J. M. GLADWIN, C. F. HEMMING, P. J. MOORE, Dr C. O'BRIEN, B. O'BRIEN, Ms C. QIRREH, CDR F. WARD, J. WARR.

Mr R. Martins spoke after supper on "The Birds of Socotra". It is hoped to publish a summary of his talk at a later date.

Evidence for natural hybridisation in hermit hummingbirds (*Phaethornis* spp.)

by Christoph Hinkelmann

Received 24 February 1995

Hybridisation occurs infrequently, though regularly, in hummingbirds (Gray 1958, Banks & Johnson 1961, Short & Phillips 1966, Graves 1990). In the Trochilidae, hybrids have often caused taxonomic problems and the erection of new species or even genera (for details, e.g., Meyer de Schauensee 1947, 1966, Berlioz 1929, 1932, 1938, 1964, Berlioz & Jouanin 1944, Graves 1990, Graves & Zusi 1990, Hinkelmann *et al.* 1991). Species with similar habitat requirements and mainly allopatric distributions may hybridise where they meet in contact zones. Others, with different habitat preferences, may interbreed where their favourite environments have a common border.

Until now, hybrids between hummingbird species have been reported only from the larger of the two subfamilies, the Trochilinae. Sibley (1957) recognised the importance of visual signals, e.g. nuptial flight or iridescent plumage, in the contact between the sexes and the display behaviour of trochiline hummingbirds. He reported 37 hybrid combinations, with 28 genera involved. Of these, 21 are sexually dimorphic; only in 7 cases are the sexes alike.

In hermit hummingbirds of the subfamily Phaethornithinae, the species are almost or totally sexually monomorphic, and plumage characters are not strongly specific. In their display behaviour, vocalisation appears to be more important than visual signals. Graves & Zusi (1990) recently confirmed that there are no reports of hybrids in which one parent species belongs to the Phaethornithinae, nor did they cite any case of hybridisation within the hermit subfamily.

In the course of examining over 4200 study skins of *Phaethornis* specimens from all parts of their respective distributions, I discovered 7 specimens that could not be assigned without hesitation to the many taxa described within the genus. Previous authors had also noticed that linear measurements and plumage colourations of 3 of these specimens did not agree with the variation found in the established taxa, and these 3 specimens were thus used to describe two new subspecies of the polytypic and widely distributed *Phaethornis longuemareus* (Zimmer 1950, Phelps & Phelps 1952). For 6 of the 7 specimens there were exact collecting localities; in one case the locality was not exactly known, but near a large city. Careful comparisons with regard to the examination advice by Graves (1990) revealed that each of the 7 specimens exhibited intermediate characters between two different species occurring in the same area. Based on the probability of a mosaic expression of parental autapomorphies (Graves 1990) in plumage characters and linear measurements (Table 1), a hybrid origin may thus be the most likely explanation.

TABLE 1

Linear measurements (mm) of probable hybrid specimens and their parental taxa in the genus *Phaethornis*

	Parental species 1				Parental species 2		
	n	mean	range	Probable hybrid	*n*	mean	range
		P. r. ruber		ZFMK 1982/46		*P. stuarti*	
bill, ♂	52	22.9	21–25	22	16	23.5	23–25
wing, ♂	56	30.3	28–34	36	16	39.6	37–41
		P. r. ruber		AMNH 285949		*P. rupurumii amazonicus*	
bill, ♂	52	22.9	21–25	26	21	25.8	24–27
wing, ♂	56	30.3	28–34	42	22	45.5	44–47
				AMNH 285951			
bill, ♀	98	23.1	21–25	25	14	25.8	24–27
				CMNH 74518			
				26			
				AMNH 285951			
wing, ♀	105	34.8	32–37	42	14	44.8	43–47
				CMNH 74518			
				43			
		P. r. rupurumii		Phelps 17728		*P. longuemareus*	
bill, ♂	20	25.7	25–27	27	38	25.5	24–27
wing, ♂	22	44.3	41–46	44	40	42.8	41–44.5
				MCZ 95863			
bill, ♀	15	25.8	25–28	(broken)	41	25.3	23–27
wing, ♀	15	44.5	42–46.5	45	42	43.2	41–45
		P. s. superciliosus		AMNH 233750		*P. m. malaris*	
bill, ♀	38	36.0	33–39	40	17	44.1	42–46
wing, ♀	42	56.8	55–58	60	16	64.5	62–66.5

Phaethornis ruber ruber x *P. stuarti*

A single specimen caught in the vicinity of Cochabamba, Bolivia, arrived alive in Germany in 1981. It was purchased by Dr Karl-L. Schuchmann and, after it died, was deposited in the scientific collection of the Zoological Research Institute and Museum Alexander Koenig (ZFMK) in Bonn (♂, ZFMK No. 1982/46, coll. by Charles Cordier, October 1981, "Cochabamba"). Whereas linear measurements (Table 1), in particular wing-length, are intermediate between *Phaethornis ruber ruber* and *P. stuarti*, plumage colouration provides few clues. The reddish belly is paler than in nominate *ruber* and agrees with *stuarti*, the breast is more intensely coloured than in *stuarti* and equals *ruber*, the whitish chin area is as small as in *ruber* and smaller than in *stuarti*. The margins of the four outer pairs of rectrices are whitish as in adult *stuarti* (reddish in *ruber*), and the whitish tip of the central pair of rectrices is as small as in *ruber* and thus smaller than in *stuarti*.

However, *Phaethornis ruber* and *P. stuarti* are sister species and can be distinguished only by a few slight differences in plumage colouration. Nominate *ruber* and *stuarti* approach each other in S.E.

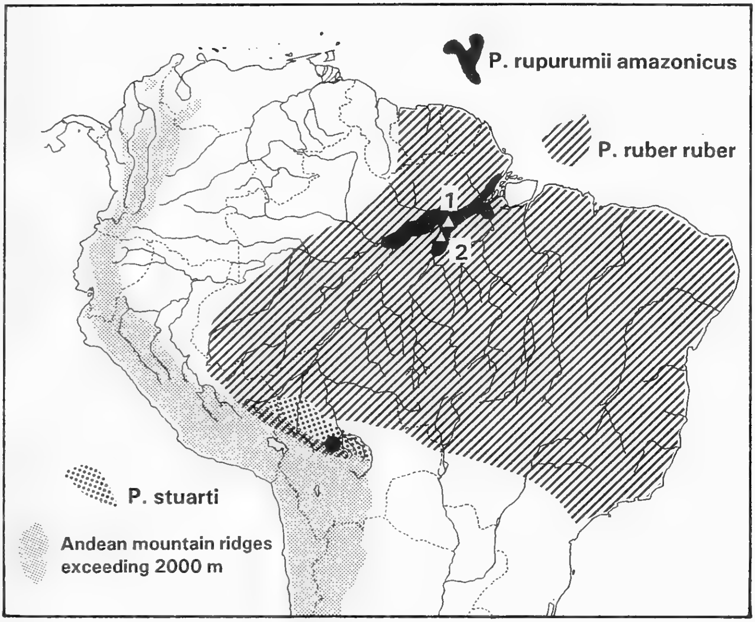

Figure 1. Distributions of *Phaethornis ruber ruber*, *Phaethornis stuarti*, and *Phaethornis rupurumii amazonicus* (range within the distribution of *P. r. ruber*). Black dot: Cochabamba, Bolivia; white triangles: 1—Santarem, Brazil, 2—Caxiricatuba, Brazil.

Peru and W. Bolivia (Fig. 1) and behave almost exclusively like paraspecies. Their only sympatric distribution is in the southern part of the Departamento Madre de Díos, Peru, but this population of *stuarti* may be isolated.

Although both species are known from sea level to 1000 m, in the contact area along the Eastern Andes on the upper course of the Beni river northeast of Lake Titicaca *P. stuarti* mainly inhabits the lowlands whereas *P. r. ruber* is limited to higher elevations. The bird in question very probably originated from the Yungas or Chapare region north of Cochabamba where nominate *ruber* and *stuarti* are in contact, and no other *Phaethornis* species of similar body mass is found.

Phaethornis ruber ruber x *P. rupurumii amazonicus*

In 1950, Zimmer described two birds, male and female, from Caxiricatuba, on the right bank of the lower Tapajos river (Fig. 1), as "*Phaethornis longuemareus aethopyga*". Due to the intensely dark-coloured throat he considered the new form to belong to the polytypic *P. longuemareus*, a species widely distributed between S. Mexico and central Peru, in N.E. South America and in Trinidad. The description of *aethopyga* apparently extended the species' distribution to the lower Amazons.

Careful examination of their morphological characters, however, has revealed that the taxa comprising *Phaethornis longuemareus sensu* Peters (1945) represent a paraphyletic "species" which should be divided into three species; *longuemareus* (Trinidad, E. Venezuela to French Guiana), *atrimentalis* (east of the Andes from central Colombia to central Peru) and *striigularis* (S. Mexico to Venezuela and Ecuador west of the Andes) (Hinkelmann 1988a, 1990).

There are only two small *Phaethornis*, of similar size and body mass as *aethopyga*, occurring along the lower Amazons: *P. ruber ruber* and *P. rupurumii amazonicus*. Previous claims that *P. nattereri* is distributed in the campos 'islands' within *terra firme* forest along the lower courses of the rivers Amazons and Tapajos (Müller 1973, Hinkelmann 1988b; my map in Sick 1993, p. 342) are based on a misidentification by Pinto (1938). He later determined the unique specimen from Obidos correctly as belonging to the subspecies *amazonicus* which he considered, like *rupurumii*, to belong to *P. squalidus* (Pinto 1947).

Three specimens of *aethopyga* are preserved in scientific collections (American Museum of Natural History, New York: ♂, AMNH No. 285949, Caxiricatuba, Brazil, coll. A. M. Olalla, 20 May 1931, type specimen; ♀, AMNH No. 285951, Caxiricatuba, coll. A. M. Olalla, 9 May 1931; Carnegie Museum of Natural History, Pittsburgh: ♀, CMNH No. 74518, Colonia de Mojuj, Santarem, Brazil, coll. S. M. Klages, 27 October 1919). Both localities are located on the right bank of the lower Tapajos river, south of the Amazons.

Careful examination of these specimens revealed that their morphological characters are intermediate between *P. ruber ruber* and *P. rupurumii amazonicus* or agree with those of either probable parental species. The male (AMNH No. 285949), portrayed in Grantsau (1988, p. 149), agrees with nominate *ruber* in the colouration of the chin, breast, belly, upper and under tail-coverts, and margins of the rectrices, and the more intense iridescence of the upperparts. Dark throat colouration, breadth of the margins of the rectrices, and bill length correspond to *amazonicus*. Intermediate characters are the shape of the rectrices and the general size as expressed, e.g., by wing-length (Table 1). White colouration at the base of the outer rectrices is due to a (possibly individual) lack of pigments and is missing in both probable parental species.

The female specimens are very similar to each other, the only difference being more greyish underparts in CMNH No. 74518. Whereas the greyish colour very much resembles *amazonicus*, the more reddish underparts of AMNH No. 285951 are very similar to those of *ruber*. Chin, breast, belly, upperparts, upper and under tail-coverts agree with the male specimen and, together with intermediate measurements, point to the probable hybrid origin. The participation of *amazonicus* is corroborated by the darkish throats of each of the three specimens. The rachis of the central pair of rectrices is red, which clearly indicates the parenthood of *ruber* because this character state is synapomorphic in *P. ruber* and its sibling, *P. stuarti*.

Phaethornis ruber inhabits lowland rain forest as well as several types of more open and drier forests. In the lower Amazons region it also

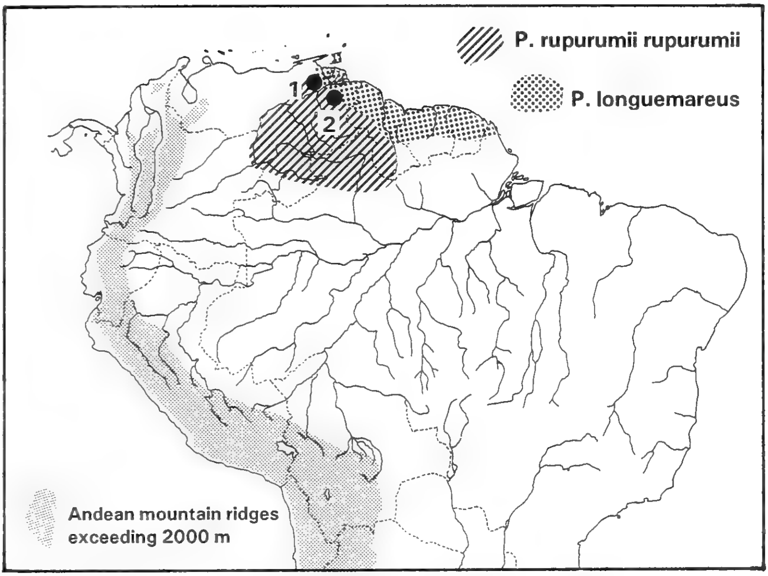

Figure 2. Distribution of *Phaethornis rupurumii rupurumii* and *Phaethornis longuemareus*. Black dots: 1—Monagas, Venezuela, 2—Cerro Tomasote, Venezuela.

occurs in the *várzea*, in secondary forests and the *campos* islands (Snethlage 1908, 1913, 1928, Stone 1928, Peres & Whittaker 1991). The latter habitat types are preferred by *P. rupurumii amazonicus*, which is lacking in forest of the *terra firme* (Snethlage 1913). Caxiricatuba and Santarem are both located in the area of *campos* islands.

Phaethornis rupurumii rupurumii x *Phaethornis longuemareus*

The nominate subspecies of *Phaethornis rupurumii* and the closely related *P. longuemareus*, which should be regarded as a monotypic species (Hinkelmann 1988a, 1990), meet each other in N.E. Venezuela and W. Guyana (Fig. 2). Two specimens exhibiting characters of both species are preserved in scientific collections (Phelps Coll. No. 17728, deposited in the AMNH, New York: ♂, Cerro Tomasote, El Palmar, Bolívar, Venezuela, coll. Fulvio Benedetti, 6 April 1942; Museum of Comparative Zoology, Cambridge: MCZ No. 95863, ♀, Maturín, Monagas, Venezuela, formerly Coll. R. H. Jung, purchased by Barbour at Schlüter Co., Halle, Germany, in 1906). In 1952, Phelps & Phelps based the description of a new subspecies, *imatacae*, of the polytypic *P. longuemareus*, *sensu* Peters (1945), on the male from Cerro Tomasote. It is still the only known individual of this "subspecies" (Aveledo *in litt.*).

Linear measurements of both *P. rupurumii rupurumii* and *P. longuemareus* are very similar, and those of the probable hybrid specimens are within their regular range of variation (Table 1). Both

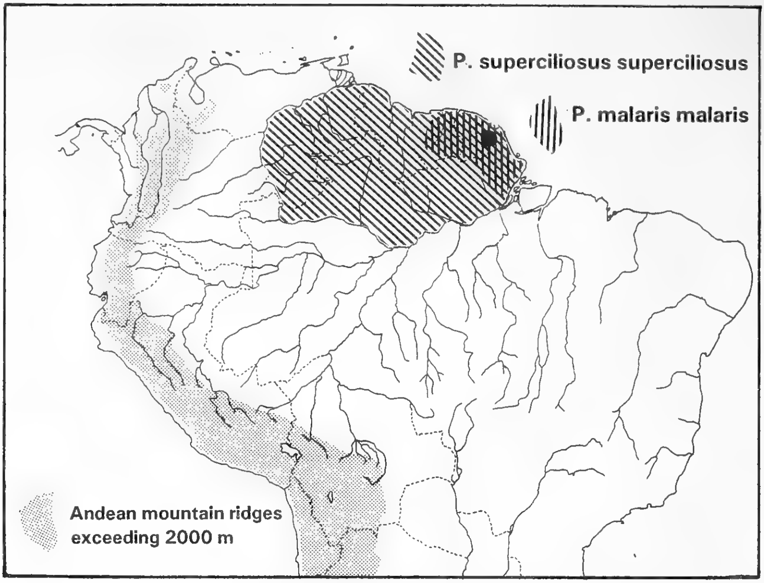

Figure 3. Distribution of *Phaethornis malaris malaris* and *Phaethornis superciliosus superciliosus*. Black dot: Pied Saut, French Guiana.

specimens have dark throat-feathers with pale edges producing a striped appearance, as in *P. r. rupurumii*, whereas in *P. longuemareus* they lack pale edges so that the throat appears uniformly dark. The colouration of the sides of neck is ochraceous as in *longuemareus*, not brownish-grey as in nominate *rupurumii*; feather margins of the upper tail-coverts are rusty red as in *longuemareus*; those of *rupurumii* are ochraceous. The margins of the rectrices in the probable hybrid specimens show the usual sex difference (broader in females than in males) and are as narrow as in *P. rupurumii*; but these are even narrower in both sexes of *longuemareus*. The underparts of both specimens are brownish-ochraceous, intermediate between the orange ochraceous of *longuemareus* and the brownish-grey of *rupurumii*. The remaining parts of the plumage are similar in *P. longuemareus* and *P. r. rupurumii*.

The probable parental species prefer more open habitats to dense primary forests (with the exception of *P. longuemareus* in Trinidad where *P. ruber* is missing), such as semideciduous or mesophytic forest (*P. r. rupurumii*; Snyder 1966; Meyer de Schauensee & Phelps 1978) and swamp forest, secondary growth or forest edges (*P. longuemareus*; Phelps & Phelps 1958, Snyder 1966, Haverschmidt 1968). They behave like parapatric species but nothing is known about their possible strategies to avoid competition where both species meet. The two probable hybrids were collected in this area of probable contact (Fig. 2). The only other *Phaethornis* of similar body mass occurring in this

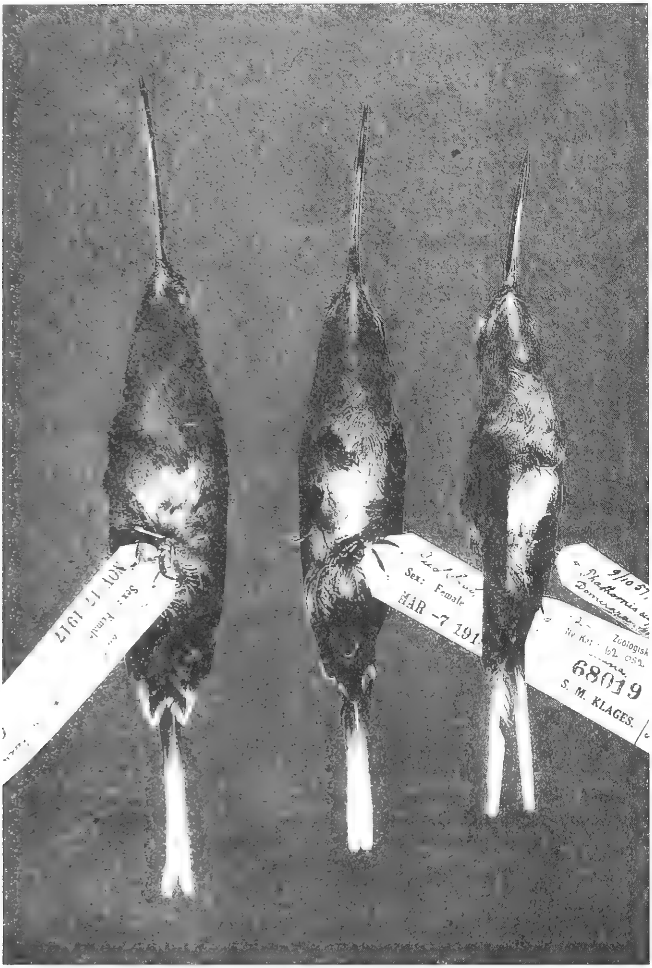

Figure 4. Ventral view of *Phaethornis malaris malaris* (left, Carnegie Museum of Natural History No. 64827, ♀), probable hybrid (centre, American Museum of Natural History No. 233750, ♀), and *Phaethornis superciliosus superciliosus* (right, Zoologisk Museum Copenhagen No. 62052, ♀). Photo: E. Schmitz.

region, *P. ruber episcopus*, inhabits wetter habitats like rain forests, is of smaller size, and easily distinguishable by plumage characters.

Phaethornis malaris malaris x *P. superciliosus superciliosus*

The *Phaethornis superciliosus-malaris-longirostris* species group consists of at least 14 valid subspecies distributed between S. Mexico and S.E. Brazil (Hinkelmann in press). There is only one region where two

Figure 5. Heads of *Phaethornis malaris malaris* (above, ♀), probable hybrid (centre, ♀), and *Phaethornis superciliosus superciliosus* (below, ♀). The specimens are the same as in Fig. 4. Note the bill curvature. Photo: E. Schmitz.

members of the group occur in the same area: nominate *P. m. malaris* and *P. s. superciliosus* in Surinam, French Guiana, and the Brazilian state of Amapá (Fig. 3). The sympatric distribution of these closely-related taxa has made it difficult to define the species' limits, and it has been suggested that this is one of the few cases of "ring species" in ornithology (Peters 1945, Zimmer 1950).

Only one specimen is known which exhibits intermediate characters between *P. m. malaris* and *P. s. superciliosus* (New York: ♀, AMNH No. 233750, Pied Saut, Oiapoque, French Guiana, coll. S. M. Klages, 7 March 1918). *P. m. malaris* and *P. s. superciliosus* are easily distinguishable by size and colouration of the underparts (Fig. 4). The probable hybrid specimen is intermediate in linear measurements (Table 1) and plumage colouration. Female *P. s. superciliosus* have a prominent pale gular stripe whereas female *P. m. malaris* have only a small pale patch on the chin; the bird in question has a regular gular stripe, though narrower than in *superciliosus*. The remaining parts of its throat as well as its breast are as dark as in nominate *malaris*; they are paler in nominate *superciliosus*. The light ochraceous belly colouration of the probable hybrid is indistinguishable from *superciliosus*, but slightly deeper than in *malaris*. Its under tail-coverts are whitish with a dark base as in *superciliosus* (light ochraceous with dark base in *malaris*), whereas the margins of the rectrices are broader than in *superciliosus* and resemble *malaris*. The bill is more curved in *P. s. superciliosus* females than in *P. m. malaris* females; in the probable hybrid, it is intermediate (Fig. 5). In all remaining plumage characters, *P. s. superciliosus* and *P. m. malaris* do not differ.

Both probable parental taxa were collected by S. M. Klages 1917/18 at Pied Saut, French Guiana (e.g. *malaris*: Peabody Museum of Natural History, New Haven: PMNH Nos. 27754, 27755, 27757; New York: AMNH No. 233749; Pittsburgh; CMNH Nos. 64827, 67834, 68017; University of Michigan, Museum of Zoology, Ann Arbor: UMMZ No. 150093; *superciliosus*: PMNH No. 27753; CMNH Nos. 65672, 68005, 68104). They share the same habitat (Haverschmidt 1968, Mees 1977, Dick *et al.* 1984) and very probably use different feeding niches enabled by clearly different body masses (*P. m. malaris*: 7.5–10 g; *P. s. superciliosus*: 4–6.5 g), which are the most divergent within the *superciliosus-malaris-longirostris* species group. Whereas the body mass of *malaris* is unique in *Phaethornis*, there is one other congeneric species with a body mass very similar to *P. s. superciliosus* occurring in French Guiana and adjacent countries, *P. bourcieri*. This species, however, is morphologically clearly separated by its straight bill and a greyish-brown plumage.

Acknowledgements

I would like to thank all museum curators, in particular Dr Kenneth C. Parkes, Pittsburgh, for providing specimens under their care to support this study. The Deutscher Akademischer Austauschdienst made possible my visits to the museums of the United States of America by awarding me a study grant, and Dr Karl-L. Schuchmann, Bonn, encouraged me by many fruitful discussions.

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Possible display behaviour of White-necked Picathartes

by Harvey Mudd & Rod Martins

Received 29 January 1995

This note describes possible display behaviour performed by White-necked Picathartes (Bare-necked Picathartes/Rockfowl) *Picathartes gymnocephalus* observed by us at a small breeding colony approximately three kilometers from the University of Abidjan scientific field station, usually known as Lamto, near Toumidi, Ivory Coast.

Circumstances of observations and description of display

During the late afternoon of 12 October 1991 we had watched for an hour while adult White-necked Picathartes fed two approximately 40% grown pulli in a nest in the forest on an overhanging face of a massive rock cluster. About an hour before dusk we left the area of the nest and worked our way through the trees and under-story close to the lower portion of the rock complex. Within minutes, we caught sight of a White-necked Picathartes bounding onto a boulder, then a swaying, horizontal vine, then subsequently onto the ground near the rock face where a dark opening appeared to form the mouth of a cave in the rocks. Soon this bird was joined by others, until at least seven or eight were present, usually perched on rocks, vines, or branches 2–3 m above the forest floor. Because we were peering through several layers of trees and vegetation, remaining motionless to avoid startling the birds, it was impossible for any one observer to see more than a portion of the scene, and so to count accurately the number of individuals as they actively leapt about.

One individual attracted the attention of H.M., who was fortunate to have an angle of vision permitting observations. This bird bounded onto a fallen log that formed a very gentle arch, perhaps 2 m above the ground. Poised at the central highest point, it adopted a posture with body leaning forward and downward, legs flexed at the tibio-tarsal joint, wings raised and partially open, and neck extended and arched forward and downward so that the head pointed backward and the bill protruded between the legs (Fig. 1). This position was maintained for as long as 10 to 20 seconds, accompanied by back and forth rocking and further stretching of the neck so that the overall slant of the body increased and decreased, and the head extended more or less rearward. Completing these actions, the bird moved to the ground, but within seconds returned to the log, repeating the sequence. This behavioural pattern was performed at least three times during approximately 30 minutes. The sequence was performed while the bird was only a few metres from, level with, and facing, the cave entrance around which several other individuals were gathered.

Figure 1. Posture assumed by White-necked Picathartes during the behaviour described in this paper. This figure was drawn by Michael O'Brien, based on descriptions and comments by H.M., on photographs of *Picathartes* in other postures, and on measurements of specimens at the National Museum of Natural History, Smithsonian Institution, Washington. The authors are indebted to Mr O'Brien for his successful effort.

Discussion

The White-necked Picathartes and its close relative, Grey-necked Picathartes *P. oreas*, form a distinct and taxonomically puzzling species-pair. Based on DNA hybridization studies and anatomical evidence, Sibley & Ahlquist (1990) suggest that *Chaetops*, the rock-jumpers of Southern Africa, is the genus most closely related to *Picathartes*, and that these two genera comprise the parvorder Corvida. These authors note, however, "that additional DNA comparisons should be completed before a definite conclusion is reached". The affinities of this species pair thus persist as an enigma of Afrotropical ornithology. Studies of display can provide insights into taxonomic relationships among birds, but whether the behaviour described here can be interpreted within such a context is uncertain. We presume we witnessed a gathering of birds prior to communal roosting within the rock formation. In an informative paper on the biology of *P. oreas*, Fotso (1993) comments that several pairs often gather near a nest site close to the hour of roosting. However, neither that paper, one on the breeding of *P. gymnocephalus* by Grimes (1964), nor a recent overview of the genus *Picathartes* (Thompson & Fotso 1995) mention behaviour such as we witnessed. Without further observations, and knowledge of the relationships of the birds involved, it is not possible to know whether the behaviour observed was that only of a particular individual or, which seems more likely, was a formalized display, perhaps associated with either roosting or breeding.

ADDENDUM

A description of the behaviour here described was forwarded to Hazell Thompson, Department of Zoology, Fourah Bay College, University of Sierra Leone, Mount Aureol, Freetown, Sierra Leone. Mr Thompson is presently undertaking a study of the ecology and conservation of White-necked Picathartes in Sierra Leone. In a letter dated 9 January 1992, Mr Thompson replied: "I am not aware of any previous description of White-necked Picathartes display. . . . I have indeed seen similar behaviour in Sierra Leone but on a much reduced scale. Among groups of six to eight birds which gather at breeding sites prior to egg-laying, pairs of birds have been seen to face each other for several minutes (up to 15 minutes in one case) and alternately execute half-bows to each other. Each bow is usually followed by a short quivering of the body and tail-shaking. Extensive preening generally occurred between bows. I have not yet observed any accompanying wing movement but all the displays I observed were of birds on the ground and perhaps the wing movement you describe may have more to do with the bird maintaining its balance on the log or vine than with the actual display. The bows I observed were very shallow and could easily be mistaken as part of the preening repertoire . . . All bowing displays were preceded by short chases between bird pairs, consisting of short hops close to and around each other." Based on his own and our observations, Mr Thompson further suggested that the bowing behaviour is of "courtship significance" and that it "provides a possible functional explanation for the striking yellow head with two black patches". We are grateful to Mr Thompson for these insightful comments and for his permission to include them here. In connection with his suggestion, it may be noted that both species of *Picathartes* have along the midline between the eyes two groups of a few filoplumes 3–6 mm in length forming a crest that can be elevated and lowered at will (Fleig 1971).

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Notes on Solomon Island birds

by D. Gibbs

Received 19 April 1995

Between January and April 1994 I spent nearly three months in the Solomon Islands (this does not include Bougainville, which is politically part of Papua New Guinea; see Fig. 1). During this time I visited every island in the country with endemic species of birds. As these islands are rarely visited by bird-watchers many of the species seen are little known. Here I record some of my more interesting observations.

In the systematic list that follows, taxonomy at species level follows Sibley & Monroe (1990). Species endemic to the Solomon Islands are indicated by (E); species endemic to the Solomon Islands as geographically and formerly politically recognised (i.e. including Bougainville) are followed by (B).

HEINROTH'S SHEARWATER *Puffinus heinrothi*

Two or three birds feeding in the evening with Noddy *Anous* flocks off Kolombangara. Nearly all recent visitors have seen the species there, which strongly suggests breeding in the area.

GREAT CORMORANT *Phalacrocorax carbo*

The locals informed me that it now breeds in large numbers on the lake on Rennell island.

SANFORD'S EAGLE *Haliaeetus sanfordi* (B)

Still widespread; seen on Malaita, Makira and Choiseul. Remains fairly common on latter.

ORIENTAL HOBBY *Falco severus*

One seen on Choiseul is the second record for the island. Probably more frequent than old records suggest.

BUFF-BANDED RAIL *Gallirallus philippensis*

Common on Nendo, Santa Cruz, where not previously recorded, relatively bright individuals with a poorly developed orange-buff breast band; probably closest to *G. p. sethsmithi* of Vanuatu. A rail seen running across the road on Malaita was most likely this species but views were poor.

ROVIANA RAIL *G. rovianae* (E)

This species, only described in 1991, is known from a single specimen collected in 1977 near Munda on New Georgia, from several unspecified observations and from reports from locals. On Kolombangara it is well known to the locals and common in scrub, overgrown coconut plantations and other degraded habitats. In early

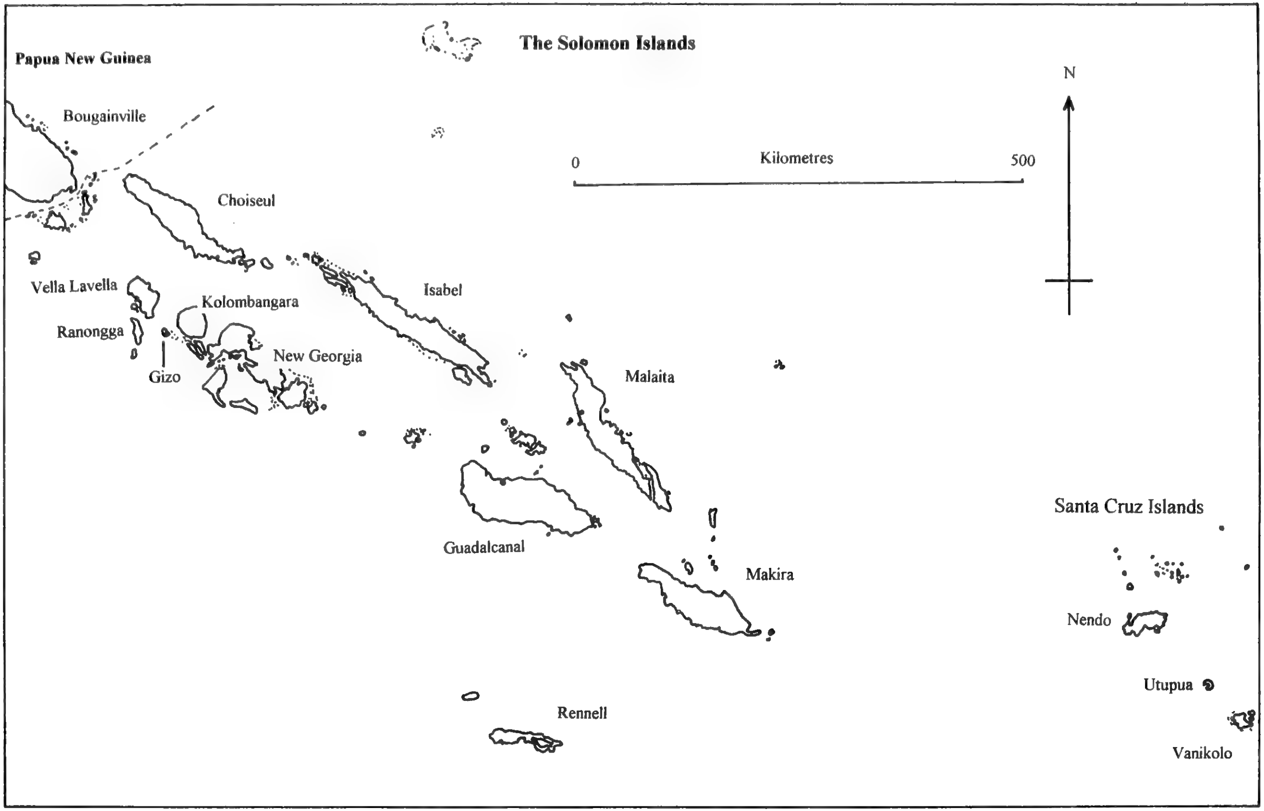

Figure 1. The Solomon Islands.

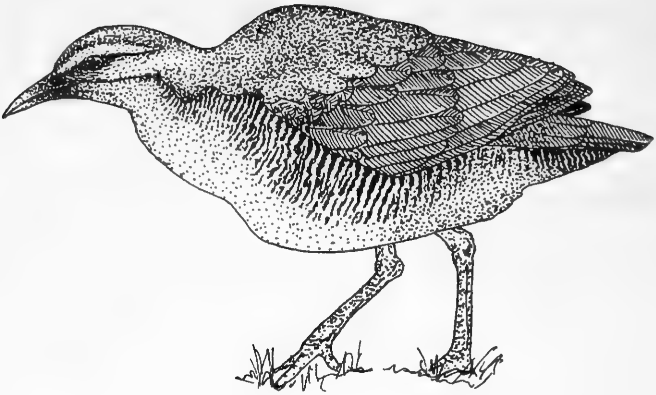

Figure 2. Roviana Rail *Gallirallus rovianae.*

morning they regularly venture out into the open but disappear into the scrub as soon as the sun hits the clearing. Once under cover they become impossible to see but can still be heard. On one morning I watched four birds wandering about on a grassy airstrip, one venturing into the centre of the strip. When disturbed they ran fast with head down, not showing the slightest tendency to use their wings. Although I call these birds (Fig. 2) *G. rovianae* they were quite different from the New Georgia bird described by Diamond (1991), and clearly belong to a distinct undescribed race. Rather darker than the nominate form, especially the underparts which are dark grey very finely barred black and white on sides of neck, flanks and under tail coverts. Lacks buff breast band. Observations of Woodford's Rail *Nesoclopeus woodfordi* on Kolombangara almost certainly refer to this form of *G. rovianae.*

CHESTNUT-BELLIED IMPERIAL PIGEON *Ducula brenchleyi* (E)

Only seen on Makira, two at 100 m above sea level. All recent records come from Makira where it would appear it is declining rapidly.

ORIENTAL CUCKOO *Cuculus saturatus*

One seen on Choiseul is the second for the island.

MOUSTACHED KINGFISHER *Actenoides bougainville* (B)

The Guadalcanal race is known from just three specimens, the last collected in 1953. Never observed by bird-watchers, this species was presumed to be very rare. It is well known in local folklore but none but the oldest villagers have ever seen it. Together with six villagers from Betilonga (now abandoned), I attempted to find the now forgotten route into the mountains used by Cain and Galbraith's hunters in 1953. With the aid of a topographical map and compass we took three days to cut a path up to 1100 m, where we camped. That evening two *A. bougainvillei* called briefly but I could not see or record them. From this camp we explored the higher altitudes. Although I heard the kingfisher every morning and evening the only one I saw was a female at 1325 m. The adult male plumage of this race is unknown so I am assuming my bird was a female because it had an olive mantle as in the female of the Bougainville race (blue in the male). Although the bird was paler on the underparts it was certainly not as pale as the specimen illustrated in Fry *et al.* (1992), and indeed was closer to the illustration of female *A. b. bougainvillei*. This bird gave itself away only by the faint noise of its wings as it moved perches, which it did rarely. While perched about 2 m off the ground it slowly pumped its tail but was otherwise almost motionless and sometimes appeared to be asleep. Possibly it is crepuscular.

BLACK-FACED PITTA *Pitta anerythra* (B)

Although frequently collected in the early part of the 20th century, this bird has not been observed by recent bird-watchers. I found it to be fairly common on Isabel in hills to 600 m, frequenting old overgrown gardens and secondary forest. It is well known to the locals all of whom are very familiar with the bird's call, although very few people have ever seen it. It can often be found in degraded habitats very close to villages and many people hear it from their house every morning and evening. Apparently it calls all year round. It is exceedingly elusive and the three individuals I saw only came into view with the help of play-back. Even then slight movement was enough to frighten it away. It calls on, or up to 20 m above, the ground for about an hour at dawn and dusk. From one garden three calling birds could be heard simultaneously.

SAN CRISTOBAL THRUSH *Zoothera margaretae* (E)

Once the call was learnt this very secretive bird (Fig. 3) proved to be frequent on Makira in montane forest at 200–600 m. I attempted to attract several with play-back and three individuals responded and came into view, one showing well but, although approaching very close, still proved difficult to see for long. The call is a very high-pitched descending whistle typical of the genus, the song a simple and tuneless series of clicking and grating notes and short whistles.

GUADALCANAL THRUSH *Z. turipavae* (E)

Known only from the type collected in 1953 in mist forest above 1000 m south of Betilonga on Guadalcanal, this taxon was treated as a subspecies of *Z. margaretae* by Cain & Galbraith. Descriptions suggest that their specimen was an immature; no field data accompanied it. My observation of one singing bird at 1450 m (Fig. 3), and observations of *Z. margaretae*, leave me in no doubt that these two taxa are quite distinct species. Like *Z. margaretae* it is very secretive but not shy. Description: generally sooty-brown; lacking obvious spots on upperwing coverts and on tertials; pale patch in wing washed buff and very inconspicuous; flanks greyish, feathers of underparts broadly edged darker producing a pattern of streaked flanks and boldly black scaled breast and belly; centre of belly paler; under tail coverts buffy; legs

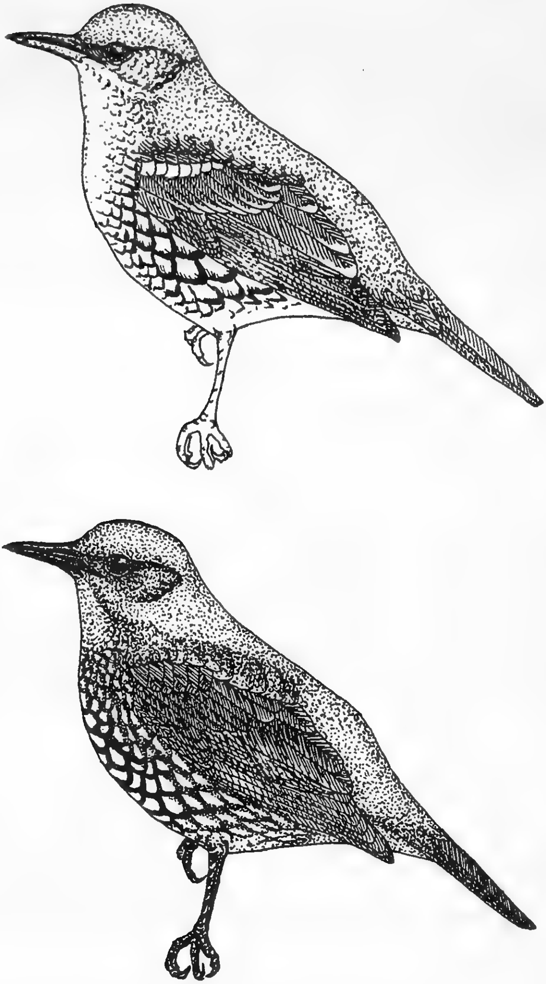

Figure 3. San Cristobal Thrush *Zoothera margaretae* (upper) and Guadalcanal Thrush *Z. turipavae* (lower).

blackish, bill black, eye dark. Call as *Z. margaretae*; song very distinct from that of *Z. margaretae*, a long, loud and melodious series of trills and repeated modulated whistles occasionally including the call note.

GUADALCANAL THICKETBIRD *Megalurulus whitneyi*

In the Solomons known from a single specimen collected in 1953 in "mist forest". I saw one in dense bamboo scrub in the moss forest at 1550 m. This very secretive species is probably not uncommon in suitable habitat above this altitude.

MALAITA FANTAIL *Rhipidura malaitae* (E)

Known only from the type series collected in 1930. I saw a single bird (possibly another present nearby) at 1100 m in the mountains of central Malaita. My local guide said it was usually seen when crossing the mountain from 900 m to the summit of the path, but not below this altitude. The bird I saw was in a mixed flock including the far more abundant *R. rufifrons*.

KOLOMBANGARA MONARCH *Monarcha browni* (E)

The race *M. b. nigrotecta* of Vella Lavella, which is probably best regarded as a distinct species, is rather uncommon in secondary forest and gardens.

VANIKORO MONARCH *Mayrornis schistaceus*

The remote island of Vanikolo (formerly known as Vanikoro) has not been visited in recent years, so the status of this bird remained unknown. I found it to be common in secondary scrub and forest, from sea-level to at least 270 m.

COMMON GOLDEN WHISTLER *Pachycephala pectoralis*

This species shows extraordinary variation, in both plumage and vocalisations, throughout the Solomons. However, with one exception, all the very different songs were easily ascribable to this species on first hearing them. The single exception is the hen-feathered *P. p. feminina* of Rennell Island. I was quite unable to recognise it until it came into view, and even then I had difficulty convincing myself that the bird was *P. pectoralis*. This form certainly deserves allospecific status.

MALAITA MYZOMELA *Myzomela malaitae* (E)

Gardens, forest, commonest in hills.

GUADALCANAL HONEYEATER *Guadalcanaria inexpectata* (E)

Fairly common at 1450–1565 m in the mountains south of Betilonga, especially in moss forests where it is conspicuous.

BANDED WHITE-EYE *Zosterops vellalavella* (E)

This, the only endemic on Vella Lavella, is common in scrub and forest edge.

GANONGGA WHITE-EYE *Zosterops splendidus* (E)

This, the only endemic on Ranongga (formerly known as Ganongga), is common in scrub, gardens and secondary forest.

SPLENDID WHITE-EYE *Zosterops luteirostris* (E)

Endemic to the virtually deforested island of Gizo and considered vulnerable, but I found it in reasonable numbers whenever I looked for it not far from Gizo town. It appears to have adapted well to scrub and secondary growth.

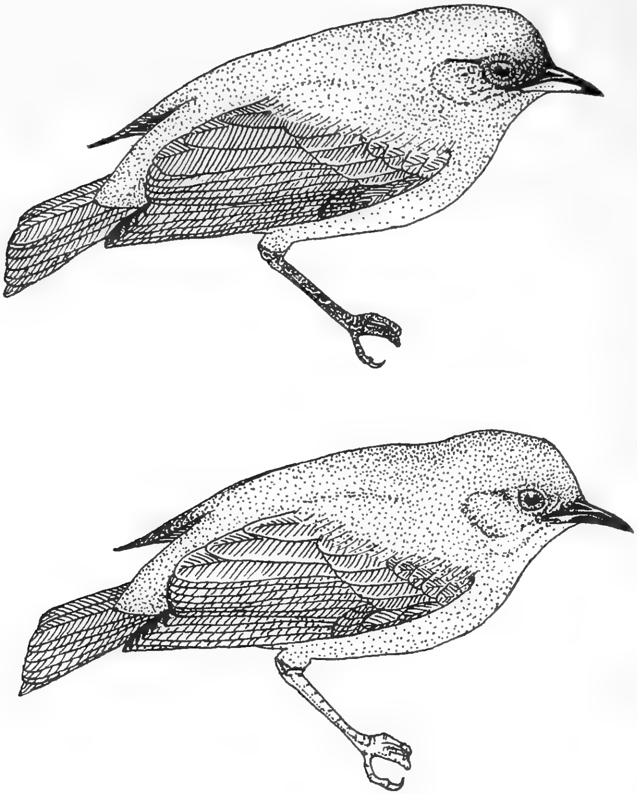

Figure 4. Santa Cruz White-eye *Zosterops sanctaecrucis* (upper) and Vanikolo White-eye *Zosterops* sp.

SANTA CRUZ WHITE-EYE *Zosterops sanctaecrucis* (E)

As no bird-watchers have visited the Santa Cruz islands recently the status of this bird (Fig. 4) remained unknown. It is common in scrub, gardens and forest.

VANIKOLO WHITE-EYE *Zosterops* sp.

No member of this genus has ever been reported from Vanikolo. During my brief visit to the island I observed *Zosterops* twice, a group of three not associated with other species and a single bird in a mixed-species flock, in forest and natural secondary growth at 140–175 m. I did not explore much higher than this. All four of these birds were low down and gave very good, close views (Fig. 4). It is probably not uncommon so it is surprising that the species has never been collected. This taxon is closely allied to *Z. sanctaecrucis* being the same size and shape. Bill a little more slender. Plumage all dull olive, perhaps a little brighter than *Z. sanctaecrucis*. Some individuals slightly yellower on throat. Lores concolorous with head. Eye-ring completely absent, no more than a narrow rim of yellowish-grey bare skin surrounding the eye. Bill black with small area of fleshy-yellow at base of lower mandible, smaller than in *Z. sanctaecrucis*; looks entirely black in all but the closest views. Iris dark brown. Legs entirely yellowish-orange. Call a soft churring.

SANFORD'S WHITE-EYE *Woodfordia lacertosa* (E)

Appears to be restricted to original forest. The only such habitat I visited on Nendo, Santa Cruz Islands, was badly degraded and small in extent, but several birds were seen in a few hours.

WHITE-EYED STARLING *Aplonis brunneicapilla* (B)

Only known from Bougainville, Rendova (south of New Georgia) and Guadalcanal, where it is very local but may be plentiful where it does occur. I did not locate it on Guadalcanal but saw several in northern Choiseul where it has not previously been recorded. One or two were often seen with flocks of Metallic Starlings *A. metallica* in and around gardens cut out of the primary forest, the full plumaged birds showing the conspicuous elongated central tail feathers as they flew over, much longer than seen in *A. metallica*. In many birds these long tail feathers are lacking or broken. When perched they are seen to be slightly more heavily built than *A. metallica* with oily-black head and neck, remainder of body plumage shiny green. Bill very obviously heavy with a strongly curved culmen. The pearly-white eye is clearly visible when the bird is at rest and even with good flight views. Immatures are dark-eyed but have the same bill shape. No distinctive calls were recognised.

Acknowledgement

I am very grateful to Dr Jared Diamond for his comments on my draft manuscript and for additional information which I have incorporated into the above accounts.

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Distributional records and natural history notes on threatened and little known birds of southern Ecuador

by Jan F. Rasmussen, Carsten Rahbek, Bent Otto Poulsen, Michael K. Poulsen & Hanne Bloch

Received 28 February 1995

The study of the Ecuadorian avifauna dates back to the mid 19th and early 20th century (e.g. Sclater 1858, 1859, 1860, Berlepsch & Taczanowski 1883, 1884, 1885, Salvadori & Festa 1899 a, b, 1900, Lønnberg & Rendahl 1922). Chapman (1926) presented a thorough synthesis of the material gathered during this epoch. A wave of renewed interest in Ecuadorian birds started in the early 1980s and has resulted in a wealth of information from previously little known areas (e.g. Ridgely 1980, Robbins *et al.* 1987, Ridgely & Robbins 1988, King 1989, Best & Clarke 1991, Bloch *et al.* 1991, Krabbe 1992, Toyne *et al.* 1992, Best *et al.* 1993, Robbins *et al.* 1994). A comprehensive treatment of the birds of Ecuador is also in preparation: Robert S. Ridgely and Paul J. Greenfield, *The Birds of Ecuador*, Vol. I: *Status, Distribution, and Taxonomy*. In this paper we refer to the manuscript of this book as "Ridgely & Greenfield in prep.".

Chapman (1926) was the first to realize that the avifauna of the humid premontane and montane forests of southeastern Ecuador and northeastern Peru is more closely related to that of Colombia and the northern Andes than to that of the Andes south of the Río Marañon in Peru and Bolivia. Today it is widely believed that the southern limit of the north Andean avifauna component is reached north of the Marañon River Valley (Vuilleumier 1969, Parker *et al.* 1985, Fjeldså & Krabbe 1990), which is a deep, arid inter-Andean basin surrounded by relatively low mountains. The Andes north and south of the low are connected to the west, but the mountain passes are as low as 2000 m and the montane forest is now patchy and discontinuous. Therefore the depression is believed to pose a major barrier to the dispersal of humid forest avifaunal elements of the High Andes. In the last decades important contributions to the understanding of the avifauna south of the Río Marañon in Peru were produced by Terborgh & Weske (1975), Parker & O'Neill (1980), Schulenberg & Parker (1981), Parker *et al.* (1982), Schulenberg *et al.* (1984) and Schulenberg (1987). Since the mid 1980s further expeditions have ceased due to the increased activity of the guerrilla group Sendero Luminoso.

The avifauna of the Huancabamba region north of Río Marañon in Peru was surveyed thoroughly from 1974 to 1980 during a series of expeditions from the Louisiana State University Museum of Zoology (LSUMZ) (Parker *et al.* 1985). Here we summarise the most interesting findings from the three expeditions to southern Ecuador by the Zoological Museum, University of Copenhagen (ZMUC): January–July 1989, October 1991–January 1992, and February–July

1992, representing a total of 14 months of fieldwork (1000+ man-days). Most of the fieldwork was conducted in and around Podocarpus National Park, Loja and Zamora-Chinchipe Provinces, to fill out major gaps in knowledge of the avifauna of the Central and Eastern Andes endemic centres (Bibby *et al.* 1992). In January 1992 a few specimens were collected in cooperation with the Academy of Natural Sciences of Philadelphia (ANSP) and Museo Ecuatoriano de Ciencias Naturales, Quito (MECN), where the material is deposited. In the present paper we also include material collected from 14 to 27 July 1992 by A. Sornoza Molina, F. Sornoza Molina and T. J. Davis at Panguri, *c.* 12 km NE of San Francisco del Vergel (4°37′S, 78°58′W), Zamora-Chinchipe Province (data contributed by R. S. Ridgely).

Some of our data have already been cited by other workers (e.g. Fjeldså & Krabbe 1990, Collar *et al.* 1992). Recent published data and additional references for most of the species included in this paper can be found in the publications mentioned thus far. We follow the species taxonomy of Sibley & Monroe (1990, 1993), but the species sequence of Meyer de Schauensee (1982). Where abundance is stated, we follow the definitions given in *Birds of Colombia* (Hilty & Brown 1986), treating a field trip as a one-day observation period. Table 1 gives coordinates, province, altitude, habitat and time of survey for localities mentioned more than once in the text (see also Fig. 1).

Information is given for 43 species. This includes information on 3 species new to Ecuador, 7 threatened species, and 8 near-threatened species (status according to Collar *et al.* 1994). Altitudinal range extensions of 36 species are summarised in Table 2, including several species not listed in the species accounts.

Species accounts

GREY TINAMOU *Tinamus tao*

We saw this species on three occasions on 11 April 1992 at Río Bombuscara (1100 m). In the early morning one was observed for 3–4 minutes walking on a trail before disappearing into the forest. The same morning two birds were flushed from the same trail, and late that afternoon another bird was seen briefly. The identification was based on large size (as big as *Tinamus major*), greyish ground-colour on the body and a well-marked dark stripe on a light-speckled head and neck.

The species was also heard at Panguri 21 July 1992 by T. J. Davis (R. S. Ridgely *in litt.*). There are very few recent records of this species from Ecuador (R. S. Ridgely *in litt.*).

BLACK-AND-CHESTNUT EAGLE *Oroaetus isidori* near-threatened

From January to June 1989 single birds were seen on several occasions at Cajanuma between 2600 and 3150 m. An adult was also seen on 15 November 1991 in the Cajanuma valley at 2600–2700 m. One adult and one immature were seen 30 March 1992 at Cajanuma (3000 m). One adult bird was seen soaring on 22 April at a similar altitude at the same locality. The species is rare at Cajanuma. In 1989

TABLE 1

Localities surveyed in Ecuador by expeditions from the Zoological Museum, University of Copenhagen. Province abbreviations: L, Loja; Z-C, Zamora-Chinchipe

Locality (Province)	Coordinates	Altitude (m)	Habitat	Year	Survey months (no. of days)
Above Lauro Guerrero (L)	3°57′S, 79°48′W	2200–2600	Disturbed primary cloud forest[a]	1989	Mar (2), May (4), Jun (1)
Acanama (L)	3°41′S, 78°58′W	2900–3460	Pastures and cloud forest fragments[a]	1989 1992	Apr (7), Jun (5) May (14), Jun (2)
Río Bombuscara (Z-C)	4°08′S, 78°58′W	1000–1300	Humid primary forest[a]	1989 1991 1992	Apr (2), May (4) Oct (2), Nov (6), Dec (5) Mar (3), Apr (3), May (2)
San Pedro (L)	4°13′S, 79°11′W	1700–2300	Secondary humid forest, pastures with shrubbery[b]	1991	Dec (3)
Selva Alegre (L)	3°32′S, 79°22′W	2850–3050	Fragmented primary humid forest[a]	1989	Apr (1), May (5)
Between Palanda and Valladolid (Z-C)	4°35′S, 79°08′W	1400	Patches of pasture	1989	May (1)
Cajanuma (L)	4°06′S, 79°09′W	2600–3100	Primary and secondary cloud forest, patches of bamboo[a]	1989 1991 1992	Feb (15), Mar (12), Apr (3), May (2), Jun (2) Oct (2), Nov (3), Dec (3) Feb (2), Mar (21), Apr (21), May (7)
Catacocha/Celica/Macara road divide (L)	4°08′S, 79°50′W	900–1300	Fields, *Acacia*-scrub and remnants of *Ceiba* forest	1989	Mar (3), Jun (1)
Near Sabanilla (Z-C)	4°00′S, 79°02′W	1500–1700	Disturbed humid primary forest[b]	1991 1992	Dec (1) Jan (3)
Quebrada Avioneta (Z-C)	4°17′S, 78°56′W	1850–2000	Very wet primary forest, small boggy gaps[b]	1991 1992	Nov (4), Dec (2) Jan (4)
Quebrada Honda (Z-C)	4°30′S, 79°07′W	1800–2550	Disturbed humid primary forest[b]	1991	Dec (7)
Panguri (Z-C)	4°37′S, 78°58′W	1575–1900	Humid primary forest	1992	Jul (14)
Sozoranga/Nueva Fatima (L)	4°16′S, 79°49′W	1750	Dry secondary forest[a]	1989	Jun (3)
Uritusinga (L)	4°06′S, 79°09′W	2800–3000	Remnants of primary and secondary cloud forest[a]	1989	Feb (1), Mar (3)
West of Pass on Loja-Zamora road (L)	3°58′S, 79°09′W	2500–2700	Remnants of mostly secondary forest [a]	1989 1991	Feb (3), Mar (4) Nov (1)

[a] For more detailed habitat description, see Bloch *et al*. 1991.

[b] For more detailed habitat description, see Rahbek *et al*. 1993.

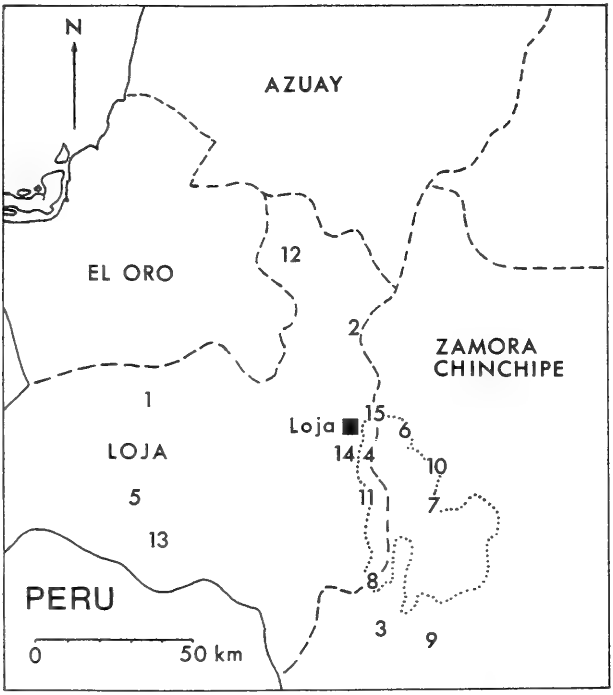

Figure 1. The fifteen localities surveyed in southern Ecuador by expeditions from the Zoological Museum, University of Copenhagen. Dashed lines, provincial borders; dotted lines, border of Podocarpus National Park. For detailed information on localities, see Table 1. 1, above Lauro Guerrero; 2, Acanama; 3, between Palanda and Valladolid; 4, Cajanuma; 5, Catacocha/Celica/Macara road divide; 6, near Sabanilla; 7, Quebrada Avioneta; 8, Quebrada Honda; 9, Panguri; 10, Río Bombuscara; 11, San Pedro; 12, Selva Alegre; 13, Sozoranga/Nueva Fatima; 14, Uritusinga; 15, west of pass on Loja-Zamora road.

single birds were also observed near the Loja-Zamora road, Zamora-Chinchipe Province on 11 April at 2000 m (3°58′S, 79°06′W) and on 16 May at 2250 m (3°58′S, 79°13′W).

The Black-and-chestnut Eagle is rare and local within its whole range (Fjeldså & Krabbe 1990) and probably needs extensive areas of undisturbed montane forest. Podocarpus National Park probably contains one of the largest areas of protected habitat for the species anywhere.

BEARDED GUAN *Penelope barbata* threatened

The first positive identification of the Bearded Guan, at Cajanuma in December 1988 (D. Platt *in litt.* 1989), represented the first record by ornithologists in Ecuador since August 1939 (see account in Collar *et al.* 1992). In 1989 we saw the species regularly at Cajanuma,

TABLE 2

Records which (according to Ridgely & Greenfield in prep.) are extensions of Ecuadorian altitudinal ranges (m) of various species. Low indicates an extension downslope; high an extension upslope; asterisk an extension of global altitudinal range. Coordinates are only given for localities not included in Table 1.

Species	Low		High	
	altitude	locality	altitude	locality
Tinamus tao	1575	Panguri		
Mycteria americana			2800*	Yangana-pass; 4°28′S, 79°11′W
Penelope purpurascens			2500	above Lauro Guerrero
Columba fasciata	1000	Río Bombuscara		
Pyrrhura albipectus			1900	Quebrada Avioneta
Brotogeris pyrrhopterus			1400	Catacocha/Celica/Macará road divide
Pionus sordida	950	Río Bombuscara	2450	Quebrada Honda
Amazona mercenaria	950	Río Bombuscara	2850	Cajanuma
Piaya cayana			2500	above Lauro Guerrero
Steatornis caripensis			2600	Cajanuma
Nyctidromus albicollis			2600*	Cajanuma
Chaetura pelagica			3200	Cajanuma
Cypseloides rutilus			3400*	Cajanuma
Threnetes leucurus			1400*	south of Valladolid; 04°35′S, 79°08W
Phaethornis guy			2750	Celica-mountains; 04°01′S, 79°52W
Eutoxeres aquila			1900	Quebrada Avioneta
Chlorostilbon mellisugus			3050*	Cajanuma
Aglaeactis cupripennis	2500	Cajanuma		
Lafresnaya lafresnayi	2200	Loja; 04°01′S, 79°11′W	3700*	Volcán Pichincha; 00°08′S, 78°35′W
Coeligena lutetiae	2450*	Quebrada Honda		
Ensifera ensifera	2150	Quebrada Honda		
Calliphlox amethystina			1400*	south of Valladolid; 04°35′S, 79°08′W
Aulacorhynchus derbianus			1800	Panguri
Aulacorhyncus haematopygus			2750*	Celica-mountains; 04°01′S, 79°52′W
Picumnus lafresnayi			1575	Panguri
Sclerurus mexicanus			2000	Panguri
Todirostrum cinereum			1850	Quebrada Avioneta
Colonia colonus			1575	Panguri
Myiarchus ferox			1650	Panguri
Phaeoprogne tapera			1200	Loja-Zamora road, 03°59′S, 79°02′W
Notiochelidon flavipes	2500	Quebrada Honda		
Catharus fuscater			2750	Celica-mountains; 04°01′S, 79°52′W
Psarocolius angustifrons			2600	Jatumpamba; 04°19′S, 79°52′W
Euphonia xanthogaster			2750	Celica-mountains; 04°01′S, 79°52′W
Anisognathus flavinucha			2750	Celica-mountains; 04°01′S, 79°52′W
Cissopis leveriana			1850*	Quebrada Avioneta
Volatinia jacarina			2250*	Jatumpamba; 04°19′S, 79°52′W

especially below the Cajanuma visitor centre, where the species was fairly common at *c.* 2550–2700 m. It was also seen, although rarely, above the visitor centre at 2750–3000 m. On visits to Cajanuma in late 1991 the species was remarkably harder to find and was only recorded twice: two different, small groups were heard at dusk on 27 November at 2600 m and a pair was seen at the same place on 10 December. The apparent difference in abundance could be due to variation in food availability in the area. The species was also uncommon at Cajanuma from March to May 1992: two birds were heard on 14 March at 2650 m, two were seen on 6 and 7 April at 2700 m, a single bird was seen on 16 April above the visitor centre at 2875 m, and one was observed on 22 April at 2700 m.

In isolated fragments of cloud forest on the east side of Acánama, Bearded Guans were observed several times in 1989. On 17 June a pair with chicks was seen at 2950 m by P. Mora. Other breeding records of the species are from the months of December–January, March, June and July (various sources; Collar *et al.* 1992). In 1992 at the same locality, the species was fairly common with a total of 23 observations and 36 individuals recorded at 2950 m during May. In 1989 the species was found at 2900–3050 m at Selva Alegre in an approximately 4 km^2 forest patch in Cordillera de Chilla. Here it was common and abundant, with several pairs observed several times each day. In 1991 one bird was seen in the San Pedro area at 2000 m, and on the same date a group of three was seen immediately east of this area at 2350 m.

Outside Ecuador the species only occurs in Peru north of Río Marañon. Recent fieldwork indicates that it occurs in the main chain of the Andes in southernmost Ecuador wherever humid primary forest remains, even in small isolated patches of forest. It has also been observed several times foraging in second growth at edges of primary forest.

Based on surveys in 1989 we roughly estimated the Ecuadorian population of Bearded Guans to be *c.* 1500 pairs (Bloch *et al.* 1991): 50–100 pairs in Cordillera de Chilla, 400 pairs in the Andes of the southern part of Azuay Province and the northern part of Loja Province, and 1000 pairs in the Andes of southern Loja Province, including Podocarpus National Park. The real figure, however, is probably considerably higher as that estimate did not include areas in Zamora-Chinchipe Province outside the Podocarpus National Park. So far it has also been found in 1992 at Cordillera las Lagunillas where 3 were seen on three occasions at 2250 m (R. S. Ridgely *in litt.*, M. Robbins *in litt.*). The Bearded Guan also seems to occur in a larger area in Azuay than previously thought (Ridgely & Greenfield in prep.).

The biology of the species is poorly known. Most of our observations were of pairs, but single birds or groups of 3–4 were also seen. They mostly foraged in the top of the canopy of smaller trees or in the lower branches of larger trees, usually 2–5 m above the ground, but sometimes as high as 10 m. The species was also seen a few times on grassland close to forest edges or on the ground inside the forest, especially near water. If disturbed while in a tree, the bird did not flee immediately, but reacted by moving its head repeatedly backwards and forwards, clucking loudly for up to a couple of minutes with increased frequency, tone and volume just before taking off. Mostly the birds escaped by flying, but when encountered on the ground, sometimes by running. The birds did not seem shy, although they must be attractive gamebirds for the locals. At least at Acanama, the Saraguro indians in the area do not shoot them, guns and cartridge probably being too expensive, but they often asked whether mist-nets could be used to catch them.

Although more abundant than previously thought, the species is undoubtedly seriously threatened by habitat destruction, which is severe in southern Ecuador (Bloch *et al.* 1991). At present it may be a minor problem, but the tame nature of the species makes it very vulnerable to hunting. The only protected area in which the species occurs is Podocarpus National Park. Unfortunately, our data suggest that the species primarily occurs on the edge of the national park, and recent surveys suggest that large parts of the population in the area may occur on the slopes below the national park (R. Tapia pers. comm.). Pressure from settlers and small-scale logging around Podocarpus National Park is relatively high and expected to increase in the future. The forest patches in Cordillera de Chilla, where the highest density was found, are few and small, and are likely to disappear in the near future if the current rate of habitat destruction continues.

PLUMBEOUS RAIL *Pardirallus sanguinolentus*

In the early evening of 26 November and 4 December 1991, H. Bloch and R. Tapia observed two birds crossing the main street of Vilcabamba at 1600 m. The site borders a river bed and moist sugarcane fields. Two specimens were collected there on 10 December 1991 by F. Sornoza and R. S. Ridgely (ANSP 184558, MECN 6137). One bird was also seen on 29 December 1991 foraging in a wet pasture bordering a small *Scirpus* marsh on the outskirts of Vilcabamba at 1500 m. These observations are the first definite records for Ecuador. The Plumbeous Rail seems fairly common in the Vilcabamba area and is well known to local people; but suitable habitat is quite limited and the total population is presumably not very large.

The Plumbeous Rail was hitherto known from north of Olmos in Lambayeque in northern Peru (R. S. Ridgely *in litt.*) to southeastern Brazil and Tierra del Fuego (Fjeldså & Krabbe 1990). The Ecuadorian birds belong to the North Peruvian race *simonsi* (Ridgely & Greenfield in prep.).

IMPERIAL SNIPE *Gallinago imperialis* near-threatened

The species was first found in Ecuador on 17 January 1990 at Loma Yanayacu on Volcán Pichincha (Krabbe 1992). We found it at Cajanuma where two to four birds were heard on 14–15 November 1991 at dusk and dawn at 2800–2900 m, close to the Cajanuma visitor centre. On 1 November 1991 one bird was seen walking on a trail through this forest at 2950 m. One bird was observed 2 March 1992 at Cajanuma while foraging in the open during foggy weather and pouring rain from 11.25 to 11.55 a.m.; the only prey item seen taken was a lumbricid 10 cm long, caught in moss on the ground (see also Poulsen 1993).

The Imperial Snipe has now been found to occur at a number of localities on the east slope of the Andes (Ridgely & Greenfield in prep.), apparently having previously been overlooked due to its retiring habits. Outside Ecuador the species is known from a number of localities in Peru including Cerro Chinguela (Parker *et al.* 1985), and from "Bogotá" trade skins of unknown origin.

GOLDEN-PLUMED PARAKEET *Leptosittaca branickii* threatened

In 1989 we saw flocks of 3–20+ individuals several times at Cajanuma from 7 February to 21 March, but not later, although fieldwork continued until late June. At the same locality small flocks were seen on 15 November and 10 December 1991. On 14 December 1991 18 birds landed in the canopy around the visitor centre. All our records from Cajanuma are from 2700 to 2900 m. Golden-plumed Parakeets may not be permanently present in the Cajanuma Valley, but appear to visit the area seasonally, at least from November to March.

At Acanama the species was seen several times on 16–22 March and 15–19 June 1989 and once on 15 May 1992 at 2950–3000 m. In 1989 it was also observed four times on 22 May south of Yangana, Loja Province (4°28′S, 79°11′W), during a few hours spent here. This is in the period when it seems to be absent in the Cajanuma area to the north.

Especially at Acanama these parakeets were often seen crossing areas to feed in isolated groups of trees. Contrary to Gretton (1986), we did not find them to be associated with *Podocarpus* spp., which were not present at any of the localities where we saw Golden-plumed Parakeets.

WHITE-NECKED PARAKEET *Pyrrhura albipectus* threatened

This species is an Ecuadorian endemic originally described from Zamora (Chapman 1914) and found only at various localities in the Zamora-Chinchipe Province and in Cordillera de Cutucú in Morona-Santiago Province (Ridgely & Greenfield in prep.). The status of the White-necked Parakeet was recently reviewed by Toyne *et al.* (1992).

Flocks of 4–15 individuals (daily totals of 10–50) were seen every day from 1 to 4 May 1989 flying upstream in the Río Bombuscara valley passing the visitor centre (1000 m). In 1991 small flocks were seen or heard almost daily 30 October–1 November, 20–23 November and 5–9 December around the Río Bombuscara visitor centre. On 22 November 1991 at Río Bombuscara, White-necked Parakeets were seen flying to moss-covered rocks adjacent to a small waterfall, climbing up and down the rocks, in the latter case often with the head down. They used wings, bill and feet to hold on to the moss and to keep balance. They poked into the wet moss with their bills, presumably drinking, then shook their heads vigorously. Sometimes they crawled out into the slower-flowing parts of the stream to drink. Later the totally wet parakeets perched on horizontal branches in front of the waterfall and autopreened or shook themselves. On 26 March and 10 April 1992 small flocks passed the Río Bombuscara visitor centre. White-necked Parakeets appear to be common in the area.

Four birds landed in trees on 1 December 1991 in Quebrada Avioneta at 1900 m. Another flock of four individuals was seen on 7 January 1992 between Romerillos and Quebrada Avioneta at 1600 m. Several small flocks were seen on 1–2 January 1992 near Sabanilla at 1500–1700 m, where two were collected (ANSP 184564, MECN).

Six specimens (ANSP 185126-9, MECN 6138, 6300) were also collected at Panguri on 14–27 July 1992, extending the species' range to close to the Peruvian border. The White-necked Parakeet has also been found close to the Peruvian border in Cordillera del Condor (Krabbe & Sornoza 1994); its days as an apparent Ecuadorian endemic are probably numbered.

BARRED PARAKEET *Bolborhyncus lineola*

The Barred Parakeet was first found in Ecuador as recently as 1979 (Ridgely 1980). The records presented here are the first from the southern part of the country, where its occurrence is not surprising, as it is known from central Peru (Meyer de Schauensee 1966, 1982) and birds tentatively referred to this species have also been recorded at Cerro Chinguela in northern Peru (Parker *et al.* 1985).

In 1989 the species was not recorded at Cajanuma in the period 3 February–12 April, but on all later visits (13–14 May, 6 and 24 June) Barred Parakeets were numerous at altitudes between 2500 and 2900 m. The only observation in 1992 was a twittering flock of 35 individuals crossing over Cajanuma late in the afternoon on 1 May, leaving the park heading northwest. The only record outside Cajanuma was a flock of seven seen on 14 March 1989 at Uritusinga (2900 m).

RED-FACED PARROT *Hapalopsittaca pyrrhops* threatened

This scarce species has been recorded from Cañar Province (Ridgely & Greenfield in prep.) south to Cerro Chinguela in northern Peru (Parker *et al.* 1985).

One pair was observed on 22 February and 2–3 birds on 10 March 1989 at Cajanuma (2700–2800 m). An adult pair with two juveniles was seen perched on 1 and 6 April 1992 at Cajanuma (2700 m). The only other information on the Red-faced Parrot's breeding season is the suspected breeding at Río Mazan during August–September (King 1989).

Whereas the species is rare at Cajanuma, it was fairly common and relatively numerous at Selva Alegre (2850–3000 m), Cordillera de Chilla, on 9–11 May 1989. Small groups were frequently seen flying 30–50 m above the 4 km^2 forest fragment. These groups were also observed in 20–22 m tall forest, foraging actively but secretively inside the canopy at heights between 4 and 20 m, apparently eating buds. The species has been reported to be associated with *Podocarpus* trees (J. R. King, in Collar *et al.* 1992). Although a common tree in the area, *Podocarpus* was seemingly not used for food. The largest flock was observed on 10–11 May 1989 and comprised 16 roosting individuals. Cordillera de Chilla may be a world stronghold for this species (see also under Bearded Guan). Sadly, no part of this mountain range is protected, and the surveyed locality and other similar small forest patches in the area are disappearing at an alarming rate.

BUFF-FRONTED OWL *Aegolius harrisii* near-threatened

This widely distributed species (from Venezuela to Paraguay) seems to be everywhere rare. Thus only four Ecuadorian records (including the one below) exist (Ridgely & Greenfield in prep.). In Peru it has been found as near Ecuador as Cerro Chinguela and Cruz Blanca (Parker *et al.* 1985) and it is perhaps overlooked and more common than the few records indicate.

Our sole record was one bird mist-netted, ringed and photographed on the night of 15–16 November 1991 at 2600 m along the road leading to the visitor centre at Cajanuma. The bird was caught in an area of second growth next to primary forest.

OILBIRD *Steatornis caripensis*

We saw 1–2 birds flying around just after sunset in the Cajanuma Valley at 2600 m on 3 days in November 1991. At one occasion a bird was seen landing repeatedly in a fruiting tree. Here the bird climbed around, apparently searching for food. A breeding cave is said to exist within Podocarpus National Park near the upper parts of Río Sabanilla (P. Mora pers. comm.).

BROWN VIOLET-EAR *Colibri delphinae*

A bird was seen at 1400 m between Valladolid and Palanda, Zamora-Chinchipe Province, on 21 May 1989. There are only three other records of this widespread species (Central America to Bolivia) from southern Ecuador (R. S. Ridgely *in litt.*), but many records from eastern Peru (M. Robbins *in litt.*).

FAWN-BREASTED BRILLIANT *Heliodoxa rubinoides*

A bird was mist-netted and collected at 1900 m on 5 January 1992 (ANSP 184593) at Quebrada Avioneta. This is one of very few records in southern Ecuador, others being one from Río Upano Valley in Morona-Santiago Province and one from the Río Isimanchi Valley in Zamora-Chinchipe Province (R.S. Ridgely *in litt.*). The species is also known from Cerro Chinguela in northeastern Peru (Parker *et al.* 1985).

PURPLE-BACKED THORNBILL *Ramphomicron microrhynchum*

This species seems much rarer in southern than in northern Ecuador. Despite several hundred person-days in seemingly appropriate habitats, the Purple-backed Thornbill was only seen twice: a male on 9 February 1989 at Cajanuma (3000 m) and another male on 27 February 1989 at Uritusinga (2750 m).

NEBLINA METALTAIL *Metallura odomae* near-threatened

We found the Neblina Metaltail to be common (more than 10 sightings 31 October–1 November) and the most abundant hummingbird at 3200–3300 m around Lagunas del Compadre southeast of Cajanuma, Zamora-Chinchipe Province (4°11′S, 79°08′W).

This species was described as recently as 1980 (Graves 1980) and is endemic to a small area in the Andes on the border between Ecuador and Peru. In Ecuador it was first recorded in 1989 at Cajanuma (M. Kessler *in litt.*), which is still the northernmost locality known for the species. At Cajanuma the Neblina Metaltail is sympatric with both the Tyrian Metaltail *M. tyrianthina* and its near relative the Viridian Metaltail *M. williami,* though probably occurring mainly above the range of Viridian Metaltail. The Neblina Metaltail was also found at Río Angashcola in Loja Province in 1991 (R. Williams & J. Tobias *in litt.*), and was the most abundant hummingbird above 3200 m at Cordillera las Lagunillas in Zamora-Chinchipe in 1992 (M. Robbins *in litt.,* Ridgely & Greenfield in prep.).

COPPERY-CHESTED JACAMAR *Galbula pastazae* threatened

This species has been found at one locality in extreme southern Colombia and 12 sites along the eastern Andes slope of Ecuador (Poulsen & Wege 1994).

In 1989 it was fairly common in the Río Bombuscara area at 1000–1300 m. This area, and presumably others within Podocarpus National Park, seems to hold good populations of Coppery-chested Jacamars, though a ''false impression of abundance may be caused by the presence of resident birds along well watched trails'' (Poulsen & Wege 1994). The species was categorized as ''insufficiently known'' and regarded as possibly threatened by habitat destruction by Collar *et al.* (1992). Visits to the Bombuscara area from late October to early December 1991 were within the breeding season of the species. Stationary pairs—as opposed to the single individuals seen in April–May 1989—were seen daily. The area along the estimated 2–3 km main trail at 950–1300 m contained four to six pairs. Two nest holes were found in an earth bank created by the construction of a trail, in one of which adults were seen feeding nestlings 5–9 December. The entrance to the nest was approximately 1.5 m above the ground. The burrow was at least 0.5 m long and curved upwards, making the nestlings impossible to see.

BLACK-BILLED MOUNTAIN-TOUCAN *Andigena nigrirostris* near-threatened

The Black-billed Mountain-Toucan is found from Venezuela to Ecuador (Fjeldså & Krabbe 1990). In Ecuador it is most numerous in the north (R. S. Ridgely *in litt.*).

Single birds were seen on 1 and 2 December 1991 in Quebrada Avioneta at 1950–2000 m. These records represent a southward extension of the known range of the species, which was previously known no farther south than the Gualaceo-Limon road in Morona-Santiago Province (Ridgely & Greenfield in prep.).

RUFOUS-NECKED FOLIAGE-GLEANER *Automolus ruficollis* threatened

The status of this species, endemic to the Tumbesian region, was recently reviewed by Best *et al.* (1993). We saw one bird on 17 December 1991 following a mixed flock through a hedgerow at San Pedro (2200 m) at the eastern edge of the species' range, very near to the border of Podocarpus National Park, from where the species has never been recorded.

SHARP-TAILED STREAMCREEPER *Lochmias nematura*

On 31 October 1991 an individual was seen escaping from a mist-net situated next to a deep, narrow ravine near the Río Bombuscara visitor centre (1000 m). One bird was also seen at close range on 11 April 1992 foraging on moss-covered boulders along the Río Bombuscara (950 m). There are extremely few records of this species in the northern (Andean) part of its range, where it must be considered rare and local, though recent work (ANSP) in the Zumba area seems to indicate that it may be more numerous there than elsewhere in its limited Ecuadorian range (Ridgely & Greenfield in prep, R. S. Ridgely *in litt.*).

CHAPMAN'S ANTSHRIKE *Thamnophilus zarumae*

We recorded this species several times near San Pedro on 16–18 December 1991 at 1600–2300 m. This represents a considerable eastward extension of the known range of this restricted-range species. Other species belonging to the Tumbesian Endemic Centre (Cracraft 1985) or Ecuadorian Dry Forest Endemic Bird Area (Bibby *et al.* 1992), such as Rufous-necked Foliage-gleaner *Automolus ruficollis*, Three-banded Warbler *Basileuterus trifasciatus*, Black-cowled Saltator *Saltator nigriceps* and Bay-crowned Brush-Finch *Atlapetes seebohmi*, also approach the continental divide in this area (our observations).

RUSSET ANTSHRIKE *Thamnistes anabatinus*

Two subspecies of Russet Antshrike have been recorded in Ecuador. *T. a. intermedius* occurs in the west south to western Loja, *T. a. aequatorialis* in the east south to at least Morona-Santiago (Ridgely & Greenfield in prep.). A male (ANSP 185466) obtained on 25 July 1992 at Panguri (1650 m), southern Zamora-Chinchipe, approaches in some characters the Peruvian subspecies *rufescens* (being more ochraceous below, lacking rufescent tone on crown, etc.) (Ridgely & Greenfield in prep.). In Zamora-Chinchipe Province the species has also been recorded at Río Bombuscara; a bird mist-netted and photographed (but not collected) here on 4 May 1989 showed characters similar to the Panguri Specimen.

OCHRE-BREASTED ANTPITTA *Grallaricula flavirostris*

Of this species, until now unrecorded on the east slope in Ecuador south of northwestern Pastaza (Ridgely & Greenfield in prep.), ANSP collected three specimens at 1575–1650 m in the Panguri area 14–27 July 1992 (ANSP 185496-7, MECN 6387). A bird was also see by P. Toyne (*in litt.*) at 950 m in the Río Bombuscara area on 22 August 1990.

PERUVIAN ANTPITTA *Grallaricula peruviana* near-threatened

This little known species is endemic to a narrow elevational zone in a small area of northern Peru and southern Ecuador. It was first found in Ecuador in 1984 in Cordillera de Cutucú, Morona-Santiago Province, by N. Krabbe (Fjeldså & Krabbe 1986), and seen again on 21 March 1990 along the Gualaceo-Limon road, also in Morona-Santiago Province, by B. Whitney (Ridgely & Greenfield in prep.). We mist-netted a male and a female on 5 January 1992 at Quebrada Avioneta, 1950 m (both collected, MECN 6293 and ANSP 184702 respectively).

COTINGA sp. *Doliornis sp.*

On 7 March 1989 two individuals of a *Doliornis* cotinga were seen at 3100 m at Cajanuma by H. Bloch and M. K. Poulsen. Observation conditions were ideal, sunny with light winds. The birds were observed at a distance of 20 m for 5–7 minutes. They were perching and foraging on the tops of 1–3 m high bushes in the transition zone between stunted treeline forest and heather paramo. One of the birds was described in the field notes as follows: cap and area between eyes and bill black, eyes grey. Upperparts dark grey, with even darker wings and tail. Throat greyish, vent and lower belly rusty and rest of underparts brownish. The other individual was generally lighter coloured, without black cap and less rich in contrasts. Upperparts brownish grey. Throat and chest greyish, rest of underparts pale rufous. The first bird was probably a male, the other a female (Fjeldså & Krabbe 1990 erroneously interpreted the second morphotype as being a juvenile; but see Robbins *et al.* 1994). Due to the rufous lower belly and the site of observation (north of the Marañon depression and 500 km north of the known range of the Bay-vented Cotinga *Doliornis sclateri* in Huánuco and Junín, Peru), the possibility that these birds represented a new subspecies of *D. sclateri* or perhaps a new species was considered by the observers (see Fjeldså & Krabbe 1990, p. 447). However, without any specimen, it was decided to refer the observations to the similar Bay-vented Cotinga (Bloch *et al.* 1991). On 24 October 1991 a glimpse of an adult was caught by H. Bloch, M. K. Poulsen and F. Brammer at approximately the same spot as the observation in 1989. In the same area, a single bird was observed on 17 November 1991 by A. Long (pers. comm.). He described the entire underparts as rufous. On 7 April 1992, at 2875 m, a *Doliornis* was seen by B. O. Poulsen very close to the site of the two previous observations. The description of this bird is the same as the presumed male from 1989.

In August 1989 a cotinga referred to as *Doliornis sclateri* (Renjifo 1994) was seen on the west slope of Cordillera Central in the Andes of Colombia (*c.* 4°37′N, 75°28′W), more than 1000 km north of Cajanuma. Renjifo described the underparts as chestnut (undertail coverts and belly to the lower breast). Also the rump was brown, a character not seen in the above observations nor described for any specimens (Robbins *et al.* 1994).

In March 1992 ANSP collected four *Doliornis* specimens on Cerro Mongus, Carchi Province, northern Ecuador, two at the same locality in June 1992, and one of a pair near the Ecuador/Peru border in October 1992 (Robbins *et al.* 1994). These birds all differ from the above descriptions by having rufous underparts that extend from the middle of the breast (not lower belly, lower breast or entire underparts) through the crissum, and a grey rump (not brown as in Colombia). These specimens have been described as a new species, Chestnut-bellied Cotinga *Doliornis remseni* (Robbins *et al.* 1994).

In conclusion, observations of *Doliornis* cotingas in southern Ecuador and Colombia differ from the specimens collected. This may be due to inappropriate descriptions and observations in the field, polymorphic variation within *Doliornis sclateri,* or an as yet undiscovered age-dependent change in the phenotype. Nevertheless, for lack of specimens from Cajanuma and Colombia any interpretation will be open to dispute.

YELLOW-THROATED SPADEBILL *Platyrinchus flavigularis*

Four specimens (ANSP 185575–7, MECN 6377) were collected at Panguri 14–27 July 1992, at 1575–1600 m. Previously, the Yellow-throated Spadebill had been recorded from only three or four localities in Ecuador: Volcán Sumaco and Río Guataracu, both in western Napo Province; Cordillera de Cutucú in Morona-Santiago (Robbins *et al.* 1987); and Ramos Urcu (Meise 1954), which cannot be located with certainty but possibly is identical to Volcán Sumaco (Paynter 1993).

JELSKI'S CHAT-TYRANT *Silvicultrix jelskii*

Single individuals were seen on 16 November and 10 December 1991 in the Cajanuma valley at 2600 m. A specimen labelled "Cajanuma Divide" (taken by D. Norton in October 1965) in the collection of the Harvard Museum of Comparative Zoology (Ridgely & Greenfield in prep.) is the only other record from the area. Jelski's Chat-Tyrant is one of few taxa of decidedly western origin occurring in the Cajanuma area. Since it has only been recorded at Cajanuma in October–December, it may be a dry season visitor there. All three Ecuadorian *Silvicultrix* species co-exist at Cajanuma. However, the Crowned Chat-Tyrant *S. frontalis*, which is basically an east slope species in southern Ecuador, and Jelski's Chat-Tyrant may be altitudinally segregated, as the former has only been recorded at altitudes of 2800–3050 m at Cajanuma.

ORANGE-BANDED FLYCATCHER *Myiophobus lintoni* near-threatened

This species has a restricted range, occurring from Azuay Province south to Peru north of the Marañon (Fjeldså & Krabbe 1990).

In 1989, groups of 2–5 birds were recorded several times in mixed-species and monospecific flocks at Cajanuma between 2700 m and 3100 m. On 10 December 1991, above the Cajanuma visitor centre, 2–3 birds participated in a mixed-species flock at 3100 m. During a 2½ month study in 1992, the species was recorded on 17 occasions with altogether 80–93 individuals. Towards the end of March, adults were seen feeding juveniles.

The species appears to be commoner in Quebrada Honda. In the periods 11–13 and 28–31 December 1991 Orange-banded Flycatchers were seen every day between 2400 and 2700 m. Up to 10 birds were seen in the same mixed-species flock. On 29 December 1991 an immature male was collected there (MECN 6089).

LONG-TAILED TYRANT *Colonia colonus*

This species is represented in western Ecuador by ssp. *leuconotus* and in the east by ssp. *fuscicapillus*. Three specimens taken at Panguri (ANSP 185612–3, MECN 6364) at 1575 m were identified as *C. c. niveiceps*, hitherto known from Bolivia to San Martín in Peru (Traylor 1979).

PALE-FOOTED SWALLOW *Notiochelidon flavipes*

This species is known from scattered localities from Mérida in Venezuela to central Bolivia (Fjeldså & Krabbe 1990).

The Pale-footed Swallow appears to be fairly common at Cajanuma, especially at the forest-paramo ecotone. Several birds were seen on 10 December 1991, one on 1 April 1992, and five on 3 May 1992; the records span an altitudinal range of 2675–3300 m. On 31 December 1991 a bird was mist-netted at Quebrada Honda at 2500 m; it was collected and is deposited at ANSP (184820). This is only the fifth Ecuadorian specimen, the first four having been taken at Cerro Pan de Azucar, Napo Province, between 29 September and 11 October 1989 (Marín *et al*. 1992). Notably the species was neither seen nor heard in Quebrada Honda, nor have other workers recorded the species there. The Pale-footed Swallow is easily overlooked or its abundance underestimated, especially when one is unfamiliar with its voice, but as the altitude is also very low for the species, it is perhaps more likely that the bird was an occasional wanderer.

SLATY-BACKED NIGHTINGALE-THRUSH *Catharus fuscater*

A bird mist-netted on 29 November 1991 at Quebrada Avioneta (1900 m) is the first definite record from southern Ecuador (see Ridgely & Tudor 1989), though its occurrence is not surprising as it is known from Cerro Chinguela in northern Peru (Parker *et al*. 1985). It was found to be uncommon at 2250 m in 1992 in Cordillera las Lagunillas (M. Robbins *in litt*., R. S. Ridgely *in litt*.). There are very few records from eastern Ecuador (Ridgely & Greenfield in prep.). However, the distribution of these records suggests that the species may occur on the entire east Andean slope, although much less abundantly than on the western slope.

SPOTTED NIGHTINGALE-THRUSH *Catharus dryas*

This species appear to be much rarer and perhaps more local in southern Ecuador than further north, as a specimen (ANSP 185733) from Panguri (1575 m) 14–27 August 1992 is the only record from Zamora-Chinchipe Province.

ANDEAN SLATY THRUSH *Turdus nigriceps*

Until 1989 there were no 20th century records of this species from Ecuador. Since then, however, it has been found breeding at several localities in southern Loja Province during the months January–April; but a search in August 1989 (ANSP) failed to locate the species there (Ridgely & Greenfield in prep.). In Peru there is a small breeding population found locally in the adjacent northwest, where, as in

Ecuador, it may only be present during the fist part of the year (Schulenberg 1987). In addition there are several records from the east slope in Peru that most probably represent austral migrants (Schulenberg 1987).

The first record from the east slope in Ecuador is an immature female from Panguri (1575 m) collected on 17 July 1992 (ANSP 185744). This was probably a migrant, either austral or of trans-Andean origin, as has been suggested (Ridgely & Greenfield, in prep.) in the parallel case of the Black-and-white Tanager *Conothraupis speculigera*.

SILVER-BACKED TANAGER *Tangara viridicollis*

One seen on 21 May 1989 between Valladolid and Palanda at 1400 m is the first record on the east slope in Ecuador. The occurrence there was to be expected, as it was recorded by Parker *et al.* (1985) in northern Peru at Cerro Chinguela, also on the east slope. A second east slope record was obtained when a male (ANSP 185894) was collected at Panguri (1575 m) on 25 July 1992. The Silver-backed Tanager here occurred in sympatry with the following species.

STRAW-BACKED TANAGER *Tangara argyrofenges*

A male (ANSP 185893) was collected on 22 July 1992 at Panguri (1600 m). Other birds were seen there in the following days by F. Sornoza and T. J. Davis, but no more specimens could be obtained (Ridgely & Greenfield in prep.). The Straw-backed Tanager has a patchy distribution ranging from northeast Peru to western Bolivia (Ridgely & Tudor 1989).

MASKED MOUNTAIN-TANAGER *Buthraupis wetmorei* threatened

This rare species is only known from a few treeline localities in Ecuador (Fjeldså & Krabbe 1990), one in Colombia (Hilty & Brown 1986) and Cerro Chinguela in northern Peru (Parker *et al.* 1985).

We recorded Masked Mountain-Tanagers only at Cajanuma. In 1989 they were seen on five occasions, at 2950–3400 m, and seemed to be rare. A pair was seen on 5 February, one each on 5 and 20 March, two on 6 June, and one on 24 June. In contrast to the first observation, the last four were of birds participating in mixed-species flocks. The bird on 5 March was seen in scattered bushes in the paramo, whereas the other observations were of birds penetrating elfin forest. The species is secretive, moving and foraging silently and slowly through dense vegetation, which may lead to an underestimation of its abundance. Thus, during a visit on 29 October 1991 to the optimal habitat of the species, 4–5 individuals were seen at 3000–3400 m along a 2 km trail covering a gradual transition between stunted treeline forest and heather paramo with dense brush. However, in spite of numerous visits to the right habitat in 1992 from March to May, it was not recorded. Possibly it makes seasonal movements in response to variation in availability of food resources.

YELLOW-WHISKERED BUSH-TANAGER *Chlorospingus parvirostris*

There has been some confusion about the status of the Yellow-whiskered Bush-Tanager in Ecuador. Statements such as "Not recorded in Ecuador, where it probably occurs" (Paynter & Storer 1970) can be found; and there are still few confirmed Ecuadorian records of this species (Ridgely & Greenfield in prep). It has recently been found to be "not uncommon" at 2250 at Cordillera las Lagunillas (M. Robbins *in litt.*).

In our surveys, Yellow-whiskered Bush-Tanagers were mist-netted and regularly seen at Río Bombuscara, at Quebrada Avioneta, and near Sabanilla during the period November 1991 to January 1992; they are fairly common or common at all three localities. One specimen was collected at Quebrada Avioneta on 6 January 1992 (ANSP 184884).

BLACK-HEADED HEMISPINGUS *Hemispingus verticalis*

This usually scarce species was numerous at Cajanuma (February–June 1989 and February–May 1992) and at Acanama (April and June 1989 and May–June 1992), 4–6 individuals being recorded in most mixed flocks. It seems, however, to be less abundant at Cajanuma during the dry season as many fewer were seen in October–December 1991.

The Black-headed Hemispingus seems to be more abundant in the southern part of its range than elsewhere. In Colombia it is regarded as "uncommon and local" (Hilty & Brown 1986) and Robbins *et al.* (1994) found it to be "rare" at Cerro Mongus in Carchi Province in northern Ecuador, while Parker *et al.* (1985) termed it "common" in northern Peru at Cerro Chinguela at the extreme southern edge of the species' distribution. This general trend is also supported by the fact that "the species was certainly more common at Cordillera Cordoncillo (Zamora-Chinchipe) and Cordillera las Lagunillas (Zamora-Chinchipe) than at our Cerro Mongus camp" (M. Robbins *in litt.*).

MASKED SALTATOR *Saltator cinctus* near-threatened

One bird was seen and photographed on 21 May 1989 at 2000 m south of the pass on the Yangana-Valladolid road, Zamora-Chinchipe Province (4°31′S, 79°09′W), in roadside shrubbery bordering patches of primary forest. The species is often regarded as a bamboo specialist (e.g. Fjeldså & Krabbe 1990), but there did not seem to be much bamboo in the area. One bird was also seen following a mixed flock at Quebrada Honda on 12 December 1991 at 2300 m.

This little known species, which until 1989 was known in Ecuador only from Cordillera de Cutucú in Morona-Santiago Province (Robbins *et al.* 1987), has recently been found at five localities in the provinces of Napo, Morona-Santiago, Zamora-Chinchipe and Loja (Ridgely & Greenfield in prep.). It is also known from northern Peru (Parker *et al.* 1985) and Colombia (Renjifo 1991) and thus seems considerably more widespread than was previously thought.

PARAMO SEEDEATER *Catamenia homochroa*

The species was recorded by mist-netting and observations from Cajanuma in 1991 and 1992 at 2650 m, Uritusinga in 1989 at 2900 m, and west of the pass on the Loja-Zamora road in 1989 at 2900 m. It is rare at all three localities.

These records are the first published from Loja Province, though it was sighted by R. S. Ridgely along the Loja-Zamora road in June 1978 and there is now also a specimen (ANSP 184909) from Cordillera Cordoncillo collected on 30 March 1992 (R. S. Ridgely *in litt.*).

OLIVE FINCH *Lysurus castaneiceps*

Single birds were seen on two different occasions on 1 November 1991 at Río Bombuscara (1150 m). Two individuals were seen on 12 April 1992 on a rock next to the Bombuscara river (950 m). Their ages could not be determined because of dim light, but one fed the other, the latter begging with shivering wings. On 11 May 1992 one or two birds were foraging at the same site at Río Bombuscara on moss-covered boulders along the river. A closed nest, situated *c.* 2 metres above the river in dense vegetation overhanging rocks, was visited regularly by the bird(s) from 5 to 6.30 p.m. Whenever an adult arrived at the nest with insects in the bill, faint chirping from nestlings could be heard through the noise of the roaring river. The only nest of the Olive Finch previously described was also situated just above a stream (Schulenberg & Gill 1987). Considering the time between the observations in April and May, it is likely that the observation in April was courtship-feeding of the female.

Acknowledgements

We thank J. Fjeldså, R. S. Ridgely and Mark Robbins for their many constructive comments on the manuscript and M. E. Petersen for linguistic improvements. We also thank R. S. Ridgely for providing us with the data from the ANSP/MECN fieldwork at Panguri and allowing us to incorporate it in this paper. Our expeditions were generously supported by Aage V. Jensen Charity Foundation (1989 and 1991), the Academy of Natural Sciences of Philadelphia (January 1992), the Danish National Science Research Council (grant 11-9116) and the Zoological Museum, University of Copenhagen (February to July 1992). We are grateful to the Ministerio de Agricultura y Ganadería (MAG) for permission to conduct research in Ecuador. D. Espinosa of Universidad Nacional de Loja and N. Hilgert de Benavides of Fundación Ornitológica del Ecuador (CECIA) were most helpful and provided good cooperation. We would like to thank F. Brammer, M. B. Christiansen, P. A. Cueva, J. Fjeldså, A. Frølander, N. Krabbe, P. Mora, E. Pitter, R. San-Martin, Fernando Sornoza M., Francisco Sornoza M., R. Tapia and B. Trujillo M. for participating in the fieldwork. The park guards of Cajanuma, Delicio, Guillermo, Miguel, Pedro, Rodrigo and Victor, kindly contributed practical help in various ways. We also thank N. and J. Krabbe for hospitality during many periods in Quito. We are indebted to M. B. Christiansen, M. Kessler, N. Krabbe, A. Long, T. Læssøe, D. Platt, L. M. Renjifo M., and especially Mark Robbins and R. S. Ridgely for sharing their unpublished data with us.

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Recent observations and notes on the ecology of the Royal Sunangel *Heliangelus regalis*

by N. Seddon, R. Barnes, S. H. M. Butchart,
C. W. N. Davies & M. Fernandez

Received 14 March 1995

Between July and September 1994, a team comprising five British and Peruvian ornithologists carried out surveys on the Cordillera de Colán, a semi-isolated mountain range in Amazonas department, northern Peru. The fieldwork was conducted as part of a conservation project organised from the University of Cambridge in the U.K. and the Asociación Peruana para la Conservación de la Naturaleza (APECO) in Peru. The aims of this project were to assess the habitat requirements and conservation status of the threatened, restricted-range and poorly known birds of the remaining elfin and cloud forest. The surveys were conducted at 1500–2650 m at two locations in the southern part of the range. A number of bird species of conservation interest were recorded, including the Royal Sunangel *Heliangelus regalis*, a hummingbird threatened with global extinction.

Status

This species was discovered in 1975 by Fitzpatrick *et al.* (1979) at 1800–2200 m above San José Loudres on the Cordillera del Condor, northern Cajamarca (*c.* 5°02′S, 78°51′W). Two males were subsequently collected by Davis (1986) at 1450 m north-east of Jirillo, San Martín (*c.* 6°03′S, 76°44′W). Habitat destruction and fragmentation within the Royal Sunangel's restricted range have led to it being listed as Vulnerable in Collar *et al.* (1994).

Expedition records

Between 16 and 31 August 1994 we made 45 observations of males and 44 of females in two areas north of the village of San Cristobal (5°50′S, 78°13′W): one on a ridgetop at 1950 m, the other at 1750 m. Most males (60%) were observed on the ridgetop and a maximum of three were seen together at any one time. In contrast, the majority of females (95.5%) were observed at the lower area. Two of the records of males were presumed to be immatures. The plumage of these individuals was flecked with grey, as described for subadults by Davis (1986), and the tail appeared shorter than that of other males.

Habitat

The sunangel was observed in a habitat we termed 'elfin scrub'. This habitat bordered elfin forest within the humid lower montane zone (as defined by Holdridge *et al.* 1971). Elfin scrub occurred upon sandy soils with up to 40% exposed rock, and consisted of grassland with scattered dead trees and stunted lichen-covered bushes (including *Clusia* sp.). Ericaceous plants, succulents and moss were common. Bracken ferns and flowering plants were abundant, and included at least three members of Orchidaceae, two of shrubby Compositae, and the flowering melastome *Brachyotum quinquenerve*. This latter species, previously noted as being the preferred nectar source of the Royal Sunangel (Fitzpatrick *et al.* 1979), was the most abundant flowering species in the area of elfin scrub at 1950 m. At the lower area however, *B. quinquenerve* was rare. In common with the habitat where Fitzpatrick *et al.* (1979) discovered the sunangel, there was evidence of regular fire disturbance in the elfin scrub. It is likely that fire, both natural and unnatural, plays an important role in shaping this habitat.

Foraging behaviour

At 1950 m, males were observed moving from flower to flower on *Brachyotum quinquenerve* bushes, usually at 0–2 m above the ground, occasionally perching on the ground to feed on low flowers. The sunangel typically fed on the nectar of approximately 3–4 flowers before perching for 3–5 seconds, during which time it usually wiped its bill upon a stem. Three modes of nectar foraging were observed: one in which the bird hovered while feeding upon nectar, one in which the bird perched on a stem below the flower and extracted nectar through the corolla (as noted by Fitzpatrick *et al.* 1979), and the third whereby the bird perched and extracted nectar through the base of the corolla. In the latter mode, the sunangel seemed to use existing holes, possibly made by flower-piercers *Diglossa* spp., a practice observed in other Andean hummingbirds (Fjeldså & Krabbe 1990). Both Rusty Flower-piercer *Diglossa sittoides* and Bluish Flower-piercer *D. caerulescens* were observed feeding within the territory of one male at 1950 m.

Fitzpatrick *et al.* (1979) estimated that in 25% of flower visits the Royal Sunangel perched, rather than hovered whilst feeding. Our observations gave a figure closer to 40% (n=400), and 25% of these made use of the possible flower-piercer holes. The sunangel was never observed sallying for insects as described by Fitzpatrick *et al.* (1979). Female sunangels were typically seen feeding upon the nectar of ericaceous plants at 1750 m, and seemed to return to clusters of these flowers every *c.* 40 minutes.

Differences in elevational preference between the sexes are known in other hummingbirds, such as Viridian Metaltail *Metallura williami* and Rufous-capped Thornbill *Chalcostigma ruficeps*, and possibly occur in the elfin forest specialist Black-breasted Puffleg *Eriocnemis nigriventris* (Collar *et al.* 1992). Observations of the sunangel were made in the middle of the dry season and there was no evidence of breeding. However, as some hummingbirds are altitudinally migratory, for example Black-breasted Puffleg, it is possible that the dispersion of the male and female sunangels would have been different in the wet season. Further studies are needed in order to prove whether or not there are sexual differences in altitudinal preference in the sunangel and whether dispersion changes in the breeding season. An understanding of this is vital if this species is to be effectively protected.

Territorial behaviour

The following notes on behaviour were made in a male sunangel's territory at 1950 m during 11 hours of continuous observation from 07.00 to 18.00 h on 30 August. The territory appeared to be centred on the area with maximum abundance of *Brachyotum quinquenerve* that occurred 100 m from the edge of the elfin forest. The Royal Sunangel was often observed here either feeding on *B. quinquenerve* or perching in one of two dead trees, using the same branches 3.5 m above the ground. The use of favoured perches was also noted by Fitzpatrick *et al.* (1979). Our observations suggest that the male was defending the areas; he was seen chasing at least two other male sunangels and a female Green-tailed Trainbearer *Lesbia nuna* off the territory. While perched, the male continuously moved its head from side to side, occasionally straining forward, apparently scanning the area. Upon the appearance of another hummingbird of its own or a different species, the sunangel would emit a series of a very high-pitched *tick* notes (three per second) which continued until the intruder had been successfully chased away. However, no aggressive interactions between the male sunangel and Sparkling Violetear *Colibri coruscans* were witnessed. The latter, an often highly aggressive bird (pers. obs.), was regularly observed feeding upon a small patch of *B. quinquenerve*. Although this patch apparently fell inside the territory, the male sunagel was never seen feeding within it.

Numerous hummingbirds were observed feeding alongside Royal Sunangels at the lower altitude without any aggressive interactions. These included Booted Raquet-tail *Ocreatus underwoodii*, Green Violetear *Colibri thalassinus* and White-bellied Woodstar *Acestrura mulsant*.

Conservation status

The elfin scrub above the village of San Cristobal in the southern part of the Cordillera de Colán represents a new, and only the third, site for this threatened hummingbird. It was found to be locally common in a highly unusual habitat type. Not only were the patches of this habitat within our study area small, but it is likely to be restricted in extent on the mountain range as a whole, and it is highly vulnerable to degradation by man. In 1994, large-scale deforestation and rapid rates of habitat destruction were found on the Cordillera de Colán. This was in stark contrast to the situation in 1978 when large areas of forest were intact.

It is strongly recommended that a protected area be established urgently in the southern part of the mountain range where the largest areas of elfin scrub and adjacent elfin and cloud forest remain. Such a reserve would protect not only elfin scrub and forest specialists such as the Royal Sunangel and Russet-mantled Soft-tail *Thripophaga berlepschi*, but also the other four threatened and six near-threatened bird species, and three threatened mammal species which were recorded in the area (Davies *et al*. 1994). The conservation measures should take advantage of the current opportunities provided by both an improved security situation and the local interest and desire to help conserve the remaining habitat (Davies *et al*. 1994). Conservation action must be initiated rapidly as it was locally estimated that, at the current rates of deforestation, all forest will be degraded within ten years. Effective conservation of remaining habitat on the Cordillera de Colán would significantly help to secure the future of the Royal Sunangel.

Acknowledgements

The advisors and sponsors of the expedition during which this fieldwork was conducted are acknowledged in our report (Davies *et al*. 1994), available from Charles Davies, Clare College, Cambridge CB2 1TL. We extend special gratitude to our patron, the late Gerald Durrell, and also wish to thank the following: Rob Clay, for advice and support; all the staff at the Asociación Peruana para la Conservación de la Naturaleza (APECO), especially Dr Mariella Leo Luna for her valuable assistance and advice; staff at Birdlife International, Cambridge, particularly Adrian Long, Michael Poulsen, Beatrice Torres, and David Wege; and Daniel La Torre Lopez, our indefatigable local guide without whom much of the fieldwork could not have been carried out.

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A record of Blue-cheeked Bee-eater *Merops persicus* from the Cape Verde Islands and status of the species in West Africa

by C. J. Hazevoet

Received 11 March 1995

Hazevoet (1995) listed a record of two unidentified bee-eaters, "possibly Blue-cheeked Bee-eater *Merops superciliosus*" [=*M. persicus*], at São Jorge dos Orgãos (15°03′N, 23°37′W), in the interior of Santiago island, Cape Verde Islands, 5 March 1985. This locality, at *c.* 400 m a.s.l., is one of the lusher and relatively well vegetated areas on the island. There are river beds (which are dry at that time of year), arid hill slopes with sparse trees, agricultural fields, and extensive *Eucalyptus* plantations. The birds were observed in flight by members of a visiting party of birdwatchers. The record was communicated to CJH by observers who only saw the birds against the sun, basing their report on hearsay from other members of the party. Because insufficient details on identification were available, the record was considered unconfirmed. Recently, field notes made by other observers, who had the opportunity to view the birds well, have been brought to light and these confirm that the birds were indeed *M. persicus*. Identification was based on the very long central tail spike, very obvious copper underwings, deep green underparts and different facial pattern from the European Bee-eater *M. apiaster*. There are no previous records of the Blue-cheeked Bee-eater from the Cape Verde Islands (Hazevoet 1995).

In Africa, west of 20°E and north of the Equator, the Blue-cheeked Bee-eater breeds in the Maghreb and discontinuously across the Sahel zone from southwestern Mauritania and northwestern Senegal east to the Chad basin, with occasional breeding occurring further south (Heim de Balsac & Mayaud 1962, Fry 1984, Fry *et al.* 1988, Lamarche 1988, Morel & Morel 1990). Blue-cheeked Bee-eaters from Northwest Africa are thought to winter in mesic West African savanna, probably entirely south of 15°N, from Senegambia east to the shores of Lake Chad (Fry 1984, Fry *et al.* 1988). Birds from Northwest and West Africa are known as subspecies *chrysocercus* Cabanis and Heine, 1860, the type locality of which is Senegal.

The Northwest African population is reputedly small, viz. Morocco: local, perhaps 40–60 pairs; Algeria: probably nowhere common (Cramp 1985). The Algerian population, however, appears to be larger than the Moroccan, i.e. it probably consists of several hundreds of pairs (cf. Ledant *et al.* 1981, Mayaud 1985). The alleged breeding in Tunisia and western Libya (Etchécopar & Hüe 1964) has never been substantiated (Bundy 1967, Thomsen & Jacobsen 1979, Cramp 1985). Northwest African birds vacate their breeding grounds in Morocco and Algeria from late July to September and return in late March and, mainly, April (Heim de Balsac & Mayaud 1962, Smith 1968).

Little is known about movements of West African breeding birds, which are hard to follow due to the impossibility of distinguishing between these and visiting migrants from the north. Fry (1984) stated that the southern Saharan population probably moves south in autumn, but according to Lamarche (1988) the species is absent in Mauritania only from January to March, with most birds (presumably local breeders) arriving in May. Non-breeding Blue-cheeked Bee-eaters are particularly common near coasts from The Gambia to Sierra Leone, October–April (Fry *et al.* 1988), but in The Gambia they have been recorded in all months (Gore 1990) and in the Casamance area, southwestern Senegal, they were only absent in August–September (Sala 1983). They were abundant in coastal Guinea-Bissau during December–February, particularly in mangrove swamps, with densities of up to 19 birds/10 ha and roosts of up to 520 birds (Altenburg & van Spanje 1989, Altenburg & van der Kamp 1992). There is also a Guinea-Bissau record of a bird collected in June (Frade & Bacelar 1955).

The Cape Verde record seems to fit well with the known pattern of northward spring migration in westernmost Africa, and the birds may be assumed to have been migrants from the north. However, if the population estimates of Blue-cheeked Bee-eater in Northwest Africa (as quoted above) are within any range of credibility, northern migrants can hardly account for the occasionally abundant occurrence in West Africa. The explanation of this discrepancy may be twofold. Firstly, the Northwest African population may be considerably larger than currently known, and/or the species is more common and widespread as a breeding bird in West Africa. In particular, the breeding population in Mauritania and Senegal may be considerably larger than known at present. Lamarche (1988) reported roosts of up to 1500 presumably locally breeding birds at Nouakchott, Mauritania. A good proportion of the birds wintering in coastal West Africa may originate from Mauritania and Senegal rather than Northwest Africa. A second possibility explaining the species' abundance during the northern winter may be that considerable numbers of Asian breeding birds (ssp. *persicus*) winter in West Africa, but so far have not been recognised as such. This has been suggested earlier by Elgood (1981). If this were indeed the case, this would presumably apply to the eastern parts of West Africa rather than the west. In view of the above, it seems equally possible that the Cape Verde birds were stragglers from West Africa or migrants from Northwest Africa.

Acknowledgements

I wish to thank Mark Beaman for providing additional details of the Cape Verde record. Vincent Nijman, Resit Sözer and Jan Wattel commented on the manuscript.

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A new site for, and observations on *Serinus flavigula* in Ethiopia, with comments on its taxonomic status

by J. D. Atkins & W. G. Harvey

Received 4 April 1995

At 16.30 h on 18 September 1993 we were negotiating the rocky track to the north side of the crater rim of Fantalle Mountain (9°00'N, 39°54'E) in the Awash National Park of Ethiopia searching for *Serinus* species. A party of six or seven small finches flew from the top of a roadside acacia, crossed the road and settled on low plants of *Lavandula coronopifolia* on the edge of a gully with low sparse acacia trees, 80 m away. The birds looked slim and very pale with striking, extensive bright yellow rumps. Although not particularly shy, they were extremely restless, moving from plant to plant over an area of about 500 m^2. We were able to watch them down to 7 m for ten minutes and took detailed descriptions. The site is at 1410 m altitude.

Subsequent records

On 20 November 1993 JDA together with Yilma Dellelegn, Michel Gunther, Philippe Gautier and Xavier Eichaker encountered three similar birds on the same track at 1310 m altitude feeding on open ground under an acacia tree. On 21 November groups of one, two and three birds were found in the same area feeding on long, dry grass clumps on rocky slopes. On both days the birds were very restless, flying readily and almost vertically, up into the trees and often up to 1 km away. Further detailed descriptions were taken, but they were still unidentified.

On 12 February 1994 the authors and Yilma Dellelegn searched the two original sites without success. A particularly severe dry season had decimated ground cover and no seeding grasses or *Lavandula* were found. However the birds were located from the top of the track along the crater rim at 1600 m, mainly flying out of the crater. They used a fairly narrow flight path and flew high and strongly in the direction of the only available fresh water, about 15 km distant at Sabure Fruit Farm and the Kassam River. Others were seen feeding, mainly on remnant *Lavandula* on the steep inner slopes of the crater up to 30 m below the rim. Between 10.30 and 13.40 h a maximum of 29 individuals was seen and detailed descriptions were taken. On 13 February at the same site, similar behaviour was noted and up to 30 birds were seen between 09.55 and 12.30 h. One specimen was collected with a permit from the Ethiopian Wildlife and Conservation Organisation.

On 25 September 1994 the authors and Jukka Harjula unsuccessfully searched the two original sites and other apparently suitable areas. However between 12.00 and 13.00 h we watched up to 11 individuals feeding on the inner crater walls on *Lavandula*. Only one was seen to leave the crater, and it did not fly very far. At this time there was plenty of standing water in the area, including within the crater itself.

Field description

Apart from one characteristic (the wing-edgings), all the birds seen appeared identical on all occasions and there is complete consistency in the field descriptions. The following is a summary of detailed notes taken on the six occasions that the birds have been seen.

General impression. Slim linnet-like seedeaters with long wings, quite long tails, very plain, pale underparts and predominately plain, greyish upperparts. The most striking feature on all birds was the extensive bright yellow rump. They lacked the dumpy appearance of Serins *Serinus serinus*, Streaky Seedeaters *S. striolatus* and Yellow-rumped Seedeaters *S. atrogularis*, and had a superficial resemblance to a small Yellow-spotted Petronia *Petronia pyrgita*.

Head. Plain greyish-brown (the greyest part of the bird) with short, fine, darker crown streaks, indistinct whitish supercilia which meet above the bill, darkish lores and around eye. Throat whitish. Eye dark. Bill horn colour, darker on upper mandible.

Upperparts. Plain greyish on nape becoming progressively darker and browner on mantle which was very indistinctly streaked. Wings browner with pale edges to median coverts. The birds seen in

September 1993 showed bright lime or apple green edges to the primaries creating a panel similar to, but brighter than, that of a Streaky Seedeater. This feature was not noted on the November birds, on only one of the February birds and on one of the September 1994 birds. It is therefore probably only visible on very fresh plumage. Rump strikingly bright canary-yellow, both richer and more extensive than on Yellow-rumped Seedeaters. This colour appeared to extend onto the upper tail coverts and down the sides of the rump so that it was visible on stationary birds with folded wings. Wings quite long, extending beyond end of upper tail coverts. Tail also quite long, dark brown, darker towards tip and notched. No white or yellow visible on it.

Underparts. Completely unstreaked or spotted (but see hand description). Throat whitish. Lower throat and upper breast had an oval-shaped, rather diffuse pale yellow area which was not at all obvious in the field except when ruffled by the wind. Below this a diffuse greyish band contrasting with off-white belly and undertail coverts. Whitest on undertail coverts. Feet and toes flesh-coloured.

Vocalisations. A canary-like *sip, sip, sip* or *sip sip* given in flight between food plants. In February a brief, simple song heard once from a bird perched at 4 m in an acacia. Similar to call but more musical and best rendered as *zeet ze ze zee* with a lower tone to the middle two notes.

Habits

The birds favoured sparsely vegetated rocky slopes, including the crater walls, feeding on tall clumps of dry grass and particularly *Lavandula coronopifolia*, which is common. Only in November were they seen feeding on seeds on the ground. Characteristically they were very restless, flitting in groups of up to seven (most usually two or three) from food plant to food plant over a wide area. This behaviour is reminiscent of Citril Finches *Serinus citrinella* watched feeding on mountain slopes in Asturias, Spain, in July 1994 by WGH. When disturbed, or travelling apparently to water, they flew off strongly often initially almost vertically upwards, and then covered long distances. Their long-winged, long-tailed appearance gave them a curiously streamlined, powerful mien and may be an adaptation to flying up steep slopes, particularly those of the inner crater walls. They perched on the upper branches of trees (mainly acacia) up to 6 m and on branches of small shrubs or saplings growing from rock faces. They rarely perched on rocks and could be remarkably inconspicuous, particularly when viewed from above. The flash of bright yellow rumps was often the only way to pick them out. No other *Serinus* species were seen on Fantalle Mountain.

Hand description

The following description was taken of an unsexed individual on 13 February 1994 immediately on collection. The specimen is deposited in the National Museum of Ethiopia, Addis Ababa.

Eye. Iris brown; bill pale horn, slightly darker and pinker on the culmen, tarsus pinky brown; soles slightly paler, claws pinky brown, paler below.

Head. Grey-brown, darker on the lores with pale dirty greyish-white wash below and slightly behind eye. Obvious cleaner white supercilia extending to just behind the eye. (This characteristic seems to have been obscured by the skinning process.)

Crown. Short distinct dark brown feather centres giving brown streaked appearance, fading on the nape; on forehead dark brown feathers give almost spotted effect.

Underparts. Narrow white chin and throat, yellow wash on upper throat, stronger from central throat to upper breast, long oval or capsule-shaped. Chest mouse/warm greyish-brown with faint smoky blackish marks almost 1 cm below the throat, giving suggestions of residual but indistinct band (cf. *S. xantholaema*); this slightly darker smudging being the effect of slightly darker centres to the feathers. There is no suggestion of streaking in these markings. (This smudging had not been visible in the field on any of our sightings.) Mouse-brown breast becomes paler abruptly at bottom of breast and extends thus down to belly: undertail coverts slightly washed pale yellow. (This is, again, not a field character.) Flanks uniform colour with breast: mouse-brown.

Upperparts. Neck brownish-grey with less prominent streaking, although contrast with streaked crown not as obvious as in field. Mantle darker warm brown, with darker brown feather centres creating diffuse darker streaking, which is visible in the field. Rump bright canary yellow extending round sides to white undertail coverts. Uppertail coverts, half hidden but long, greenish yellow, browner towards tips. Solid brown tail, with no white; central two tail feathers heavily abraded.

Wings. Darker and less grey than other mouse-brown body parts. Paler fringes to the coverts, including lesser coverts. Greenish wash and sheen on lesser coverts; almost iridescent and not visible in the field. Inner primary outer webs with indistinct greenish wash, only visible in sunlight. Outer primaries with whitish edges, but effect almost certainly of abrasion. This abrasion may have taken away the green panel visible on one bird seen on 13 February. Underwing coverts paler mouse-brown, with slight suggestion of yellow on bastard wing area. Wings reach end of upper tail coverts, giving long-winged, linnet-like appearance.

Measurements. Length 112 mm. Wing (flattened) 66 mm. Tail (from cloaca) 49 mm. Tarsus 16 mm. Bill not measured as tip broken by shot.

Discussion

The *Serinus* of Ethiopia have long presented an interesting taxonomic problem occasioning much discussion in the literature (Irwin 1960, Rand 1968, Erard 1974, Van den Elzen 1985, Ash & Gullick 1989, Clement *et al.* 1993). Although sharing some characteristics with Salvadori's Seedeater *S. xantholaema* and "Northern Yellow-rumped Seedeater" *S. xanthopygius* (formerly regarded as a race of the Yellow-rumped Seedeater *S. atrogularis*), the Fantalle birds are apparently closest to Yellow-throated Seedeater *S. flavigula*. This species is known from only three sites, all within an area of about 30 km^2, 64 km north of Fantalle Mountain below the eastern escarpment of the West Highlands. The specimens were collected in 1880, 1885 and 1886, and it was not reported again until 1989 (Ash & Gullick 1990). The altitudes (1440–1500 m) and the habitat (broken arid country on rocky hillsides along the valley of a small stream) are similar to the Fantalle site which, interestingly, is the next southerly area of comparable highland in the extensive, dry bushland of the Awash.

Ash (pers. comm.) has compared the Fantalle specimen with a specimen of *flavigula* on loan from Turin and with the only specimen of *S. xantholaema* in the British Museum (Natural History), Tring. His view is that the Fantalle bird shares some of the characters of both *flavigula* and *xantholaema* but approaches the former more closely. He also considers, owing to a lack of sufficient evidence, that it is premature to come to a firm conclusion on its precise taxonomic status. We are in agreement with this.

The only three specimens of *flavigula* are old and discoloured through being soiled and foxed (on the evidence of the loaned Turin specimen and as mentioned in Erard 1974). The field description of the 1989 sightings of *flavigula* (Ash & Gullick 1990) differ in some respects from the Fantalle birds and from the Turin specimen. In particular the 1989 *flavigula* were described as having pale dull yellow rumps (compared with the bright canary yellow of the Fantalle birds), and lacked the supercilia present in the Fantalle birds. Additionally, no traces of any greenish edgings to the wing feathers were noticed in the 1989 sightings, although this is apparently a seasonal character noted in the original description of *flavigula* (*remigibus et rectricibus exterius vix virescente limbatis*: Salvadori 1888), and only noted on occasions in the field on the Fantalle birds.

Further examination of this Ethiopian group of *Serinus* is required, including DNA analysis, before a final decision can be made on the status of the Fantalle birds. It is, however, of interest to place the Fantalle birds on record, in order to draw attention to this population of *Serinus*, but to describe them as a new taxon on present evidence would be premature. It is possible that they may be shown to be a link between *flavigula* and *xantholaema*. Their similarity to *S. xanthopygius* also needs to be examined further. The consistency in appearance in the Fantalle birds does not suggest that they could be hybrids.

Ash suggested that Erard, because of his particular knowledge of Ethiopian *Serinus*, should be asked to evaluate the Fantalle specimen. The following is a resumé of his detailed comments, following his examination in December 1994. Erard immediately identified the Fantalle specimen as *S. flavigula* because of its resemblance to the birds he named as *flavigula*; the three specimens examined by Salvadori referred to in Erard (1974). As a fresh specimen it looked much brighter, whereas Salvadori's specimens of over 100 years old were much soiled and foxed. There are no *flavigula* in the Paris Museum, but Erard still had his notes resulting from his examination of the four *S. xantholaema* and the series of *S. xanthopygius*, *S. atrogularis reichenowi* and *S. dorsostriatus maculicollis* used in his paper (Erard 1974). His measurements of the Fantalle specimen using his previous method gave a wing-length of 65.5 mm and a tail length of 47 mm, so that its tail/wing index placed it among the upper values of *S. xantholaema* but not far away from *S. flavigula* and *S. xanthopygius* in Figure 3 of his paper. It is necessary, in a comparison based on small samples or single specimens, to be careful not to regard as taxonomic characters what in reality belongs to individual variation. For example, yellow rump colour may vary in intensity in relation to food and of course, with the age of the specimens; it would be interesting, for instance, to examine whether the oil in *Lavandula* could intensify the yellow pigment.

The Fantalle specimen was very similar to Erard's six specimens of *S. xanthopygius* collected in 1968 and 1970, except for its yellow throat patch and sharper striation of the upperparts. The dark blobs of brownish colour below the yellow throat patch are less visible than in most *xanthopygius* but are not comparable with the well-defined upper-breast band of *xantholaema*. The greenish edgings to the wing feathers are hardly discernible on the Fantalle specimen; probably since this is a seasonal character, also found in *xanthopygius* and *xantholaema*. The breast and flanks of the Fantalle specimen are deeply suffused with brownish-grey, unlike those of *xantholaema* but like several *xanthopygius*, particularly the two Erard (1974) referred to as probably immatures. The pattern of striation of the upperparts varies individually in all *Serinus* available in Paris, so its value in such comparisons is limited.

In Erard's opinion, the birds seen in 1989 by Ash & Gullick (1990) and the Fantalle birds (as judged by the collected specimen) belong to the same species, *Serinus flavigula* Salvadori. Erard does not think they represent different subspecies, but noted that a comparison of specimens from both localities would be necessary to ascertain this. He maintained his earlier view that *xanthopygius* and *flavigula* are closely related but emphasised that more field work was still necessary, as well as mtDNA analyses, before a firm conclusion could be reached on their relationship. Such studies should include *S. flavigula*, *S. xantholaema*, *S. atrogularis*, *S. xanthopygius*, *S. dorsostriatus* and *S. leucopygius*, and also, if possible, the enigmatic white-rumped serin seen by Ash in 1970 and others subsequently, including Jarry and himself in 1971.

The Fantalle *Serinus flavigula* appear to exist in isolation on Mt. Fantalle in the Awash National Park in a population of at least 30 similar birds, and possibly several hundreds in view of the extent of the preferred habitat. It is remarkable that, if always present, they have escaped notice over the years in a relatively well-watched area. The same remark was made about the new *Serinus ankoberensis* discovered only 70 km away in 1976 (Ash 1979); and, even closer, *flavigula* only 64 km away had not been seen for over 100 years until rediscovered in 1989. Interestingly, the present Fantalle birds were found while we searched for another unidentified *Serinus*, the white-rumped bird found by Ash in 1970 near the base of Mt. Fantalle, and for which he now has about ten reported sightings in the subsequent 20 years. This form still awaits a published description.

It is hoped that this paper will alert other observers of *Serinus* in Ethiopia and encourage further research into a group which appears to have particular evolutionary significance in that country. JDA (at the address below) will be very happy to receive and collate future interesting *Serinus* records from Ethiopia.

Acknowledgements

Our thanks go to the Government of Ethiopia, the Ethiopian Wildlife and Conservation Organisation, the British Council in Addis Ababa, the local Afar herdsmen and the staff of Awash National Park for their support and encouragement in our studies. We also thank Dr John Ash for his constructive, perspicacious comments and advice, Dr Christian Erard for his careful analysis and comments, and Dr Carlo Violani and Mr Peter Colston for much help with the loan specimen, Ato Yilma Dellelegn for his companionship and excellent eye, Mrs Sue Edwards of the Addis Ababa Herbarium for identifying the *Lavandula*, Mrs Simonetta Wyatt for translating the original descriptions by Salvadori, Ms Gillian Fernandes and Ms Anne Machira for typing the drafts and our respective partners, Gus and Pauline, for their patience and forbearance when we embarked on yet another search.

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Notes on feeding behaviour, diet and anting of some cotingas

by Andrew Whittaker

Received 25 January 1995

The following observations were made between 1987 and 1995, mostly in forest reserves of the Projeto Dinamica Biológica de Fragmentos Florestais (PDBFF), which consist of virgin *terra firme* forest and mosaics of *terra firme* forest with agricultural development (mostly cattle pasture). The reserves are situated 50–80 km north of Manaus.

The *terra firme* forest in these areas is found on nutrient-poor yellow latosols (Anon 1987) and has a continuous 30–50 canopy with occasional emergents of 40–55 m. For further details, see Stotz & Bierregaard (1989) and Lovejoy & Bierregaard (1990). Some observations were made from a 42 m observation tower in virgin *terra firme* forest. I also made opportunistic observations during periods of travel in other parts of Amazonia, at sites that will be noted in the text.

Perhaps the main interest of these observations is that they show that a number of cotinga species that have been thought to be entirely frugivorous do take insects to some extent. They also include the first record of a cotinga taking a bat, and what may be the first record of a cotinga anting.

PURPLE-THROATED COTINGA *Porphyrolaema porphyrolaema*

So little is known about this species that all field observations seem worth recording. On 19 September 1993 in Alta Floresta, Mato Grosso (9°15′S, 56°00′W), I observed a pair of Purple-throated Cotingas along a road through disturbed *terra firme* forest. The pair were about 12 m up in a fruiting tree in which several other frugivorous birds were feeding on the abundant fruit. They were well separated within the tree, about 10–12 m apart. The female was perched near the tip of a branch, where she was eating dark bluish-coloured fruits of about 1 cm diameter, bending down almost vertically to pluck and swallow them. The male was also feeding, but I was unable to observe his methods before the pair flew from the tree. On 15 September 1994, again from the same road, I watched a female feeding in a fruiting *Cecropia* tree, clinging to the clump of fruit and hanging down while plucking off bits of the finger-like 'catkins' and eating them.

SPANGLED COTINGA *Cotinga cayana*

The males are most often seen perched high up on the topmost branches (often dead and bare) of a towering forest tree, perched motionless often for long periods of time. I have also occasionally seen this species, mostly female-plumaged birds, joining the roving mixed-species flocks in the canopy of the PBDFF reserves, but they are not nearly as regular in these flocks as the Pompadour Cotinga *Xipholena punicea*. I have also seen several groups of from 2 to 6 birds, mostly adult males, in the *igapó* forest (black-water flooded forest) of the Anavilhanas archipelago on the Rio Negro river during April–July of most years. These months, in which the river rises and floods the forest, are the main fruiting season for a large number of the *igapó* trees. Schomburgk (1848) reported recorded Spangled Cotingas in large feeding flocks in coastal Guyana.

Spangled Cotingas have hitherto been recorded feeding only on fruit. On 19 September 1993 I watched an adult male sallying for flying insects (almost certainly ants or termites) from near the top of an emergent forest tree; and on 13 January 1991 watched a female-plumaged bird moving slowly and deliberately through a line of trees, 25–30 m up, peering among the leaves, very much in the manner of a foraging Greyish Mourner *Rhytipterna simplex*. As there were no signs of fruit in any of the trees, the bird was almost certainly foraging for insects.

I have watched Spangled Cotingas feeding on the catkin-like fruit of *Cecropia* trees on two occasions. An adult male and a female-plumaged bird fed by leaning down from a nearby branch and plucking pieces of fruit; an immature male plucked pieces of fruit off in flight, like a trogon, returning to a nearby branch to eat them.

PLUM-THROATED COTINGA *Cotinga maynana*

On 6 February 1992 in Seringal Occidente, Acre, I observed a male visiting a large lone *Cecropia* tree situated in a small orchard. The bird was seen briefly on several occasions feeding on the fruit. While perched he plucked off pieces of fruit and flew off with them into the adjacent forest. This behaviour is puzzling, as the little that is known about the breeding behaviour of *Cotinga* spp. (Snow 1982) indicates that males take no part in feeding young or in other nesting duties.

PURPLE-BREASTED COTINGA *Cotinga cotinga*

At 08.45 hrs on 19 June 1993, from the 42 m observation tower, I observed a female Purple-breasted Cotinga perched on a dead snag in the canopy within 20 m of the tower. She peered around, alert and with neck stretched forward; then perched motionless for another 30 seconds before flying down into the top of a neighbouring tree some 15 m away and out of sight. She re-appeared back on her original perch after about 5 minutes. Again she remained still for a couple of minutes before returning to the same tree again. This time I was able to see her through a gap in the foliage. She was shuffling her body, as if brooding, holding her wings slightly open, shaking them, and then preening under them. She was in fact anting; I could see several small black ants on the leaves and branches next to her. While perched she rotated her body through 180° on the dead branch, preening but still in a crouched posture. She was seen to lunge forwards on two occasions towards the ants, but I was unable to see any ants in her beak. She continued preening for about a minute before she hopped out of sight.

POMPADOUR COTINGA *Xipholena punicea*

I have regularly recorded female-plumaged Pompadour Cotingas accompanying large mixed-species flocks in the PDBFF reserves. Adult males seem very rarely to associate with these flocks, as also noted for the Spangled Cotinga. On five different occasions at the PBDFF I have seen single males sallying from tall trees for flying ants or termites. Previous records have indicated that the species is entirely frugivorous (Snow 1982).

In April 1991 and 1992 I saw small groups of 2–4 female-plumaged birds in the *igapó* forest of the Anavilhanas archipelago up river on the Rio Negro from Manaus; like the Spangled Cotingas mentioned above, they were feeding on the fruit that is abundant at that time of year.

At 07.00 hrs on 20 June, from the observation tower, I watched an adult male perched on a dead snag in the canopy at the top of a 30 m tree. After perching motionless for about 30 seconds, he started regurgitating seeds. The seeds appeared to be surrounded by a sticky substance which caused them to stick to the bird's bill. As he wiped his bill from side to side on the branch to get rid of them, they remained stuck to it. The seeds were oblong, about 1 cm across and 0.5 cm wide. I watched him regurgitate 8 seeds over a period of about 1½ minutes. Most of them eventually fell off, but two remained stuck to the branch all day.

SCREAMING PIHA *Lipaugus vociferans*

At 07.30 on 23 January 1995 at Reserva Ducke, near Manaus, a Screaming Piha was observed about 20 m up in the sub-canopy of virgin *terra firme* forest, holding a 5–6 cm brown lizard *Anolis sp.* in its beak. The piha repeatedly hit the lizard's head against the branch until it was dead. The first two attempts to swallow the lizard head first were unsuccessful; each time the bird, after swallowing three-quarters of the lizard's body, regurgitated it. Finally, after re-arranging the lizard in its bill, it successfully swallowed it. This seems to represent the first record of this cotinga feeding on a reptile.

CAPUCHINBIRD *Perissocephalus tricolor*

On 3 December 1990, in the PDBFF forest reserve, my attention was attracted to the 'growling' contact call of a Capuchinbird. It was in the mid-story at a height of 10–12 m, some 25–30 m away from a mixed-species under-story flock mainly composed of antbirds, furnariids and woodcreepers. The Capuchinbird was perched almost motionless, moving only its head very slowly and apparently searching for prey. Similar behaviour was noted by Snow (1972), and I have also noted it on almost all occasions when I have observed Capuchinbirds foraging in the mid-story. I have only recorded them following mixed-species under-story flocks twice, once in the PDBFF reserve and once at Maracá Island, Roraima. After some minutes several alarm calls from birds in the flock alerted me to the fact that the Capuchinbird was on the move. Perhaps, because of its relatively large size, it was mistaken for a predator. It flew directly to another perch 8–10 m away, where it continued searching for prey. Then after about half a minute it left the perch and flew suddenly with a swift and direct flight, disappearing into a dense tangle of vines and leafy branches some 10–12 m away, where it remained hidden from my view. About 30 seconds later it flew out of the tangle with something large in its beak, and landed on a liana 8–10 m up and about 20 m in front of me. I was able to clearly see a live bat in its beak. The bat was dark brownish-black, about 6–8 cm in body length; it was still moving a little and had one wing hanging out of the bird's bill. The Capuchinbird then began to batter the bat against the liana. It continued to do so until the wings were manageable; this enabled it to hold the bat comfortably in its beak, whereupon it flew off strongly through the mid-story and out of sight, presumably to feed its young. An active Capuchinbird lek was located some 1.5 km away, in the direction in which it flew.

BARE-NECKED FRUITCROW *Gymnoderus foetidus*

On 21 August 1991, on the Rio Negro about 260 km northwest of Manaus, I observed three Bare-necked Fruitcrows sallying for insects from the tops of two huge emergent *Ceiba* trees about 100 m apart; a pair in one tree and a lone male in the other. They looked large and clumsy as they sallied almost vertically 15–30 m above the trees after flying insects. Although the flight was laboured, with a lot of flapping, several successful sallies were made. The fruitcrows were preying on a hatch of good-sized winged ants or termites. Between 05.45 and 06.00 hrs on 18 and 19 September 1993 at Alta Floresta, after a heavy rainstorm late on the previous day, I saw the same behaviour again. On this occasion three males were sallying for insects (almost certainly ants or termites) from the top of an emergent. Again the sallies were to 15–30 m, almost vertically, and all were successful, the birds returning either to the same perch or to another one. These seem to be the first records of this species feeding on insects.

I have seen Bare-necked Fruitcrows feeding on ripe *Cecropia* fruit on many occasions, along the banks of several Amazonian rivers, sometimes in close association with *Psarocolius* oropendolas. On 26 July 1994, near the mouth of the Rio Branco, I observed a lone male feeding on ripe Açai (*Euterpe* sp.) palm fruits.

Acknowledgements

I would like to especially thank R. O. Bierregaard, Jr. for all the help, advice and opportunities he gave me during fieldwork at the PDBFF; also Claude Gascon, Jay R. Malcolm, James L. Patton, Carlos A. Peres, Maria N. F. Silva, David C. Oren and Dionisio C. P. Neto. The manuscript benefitted from the comments and discussions of Renato Cintra and Phil Stouffer, to whom I am very grateful. Financial support was given by the following institutions: World Wildlife Fund, Smithsonian Institution, Instituto Nacional de Pesquisas da Amazônia (INPA), John D. and Catherine T. MacArthur Foundation (Chicago), Wildlife Conservation International. Special thanks to Susan Vitka and Peter Fox-Penner for equipment donation. Finally I would like to thank my wife Nadime A. Whittaker for her constant support over the years. This represents publication no. 148 in the Biological Dynamics of Forest Fragments technical series.

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IN BRIEF

A FIRST RECORD OF THE STRIPE-CHEEKED GREENBUL *ANDROPADUS MILANJENSIS* IN THE PUGU HILLS, TANZANIA

The Stripe-cheeked Greenbul *Andropadus milanjensis* (Shelley) is a montane and sub-montane bird of primary forest, resident from southern Kenya through the highlands of eastern Tanzania and Malawi to Mozambique and Zimbabwe (Stuart & Jensen 1985, Keith *et al.* 1992). According to Mackworth-Praed & Grant (1955), Stuart & Jensen (1985) and Keith *et al.* (1992), the race *A. m. striifacies* (Reichenow & Neumann) occurs in Kenya and Tanzania, where it is mainly sedentary but in the cold season, between April and August, shows altitudinal migration by descending in Tanzania down to 150 m in the Usambaras and 250 m in the Ulugurus. I here report a first record for this species near the coast.

On 26 May 1995 in the Pugu Hills (6°53′S, 39°05′E; 300 m above sea level), about 25 km southwest of Dar es Salaam, Tanzania, an adult bird was mist-netted in forest during a bird ringing study. The following details of plumage and soft-part colours were noted. Top of head and upperparts including wing coverts uniform olive-green. Tail feathers brown with narrow pale margins, shaft brown above and whitish below. Black patch from lores and base of bill to cheeks and ear-coverts, streaked white on cheeks and ear-coverts. Chin pale grey with olive wash, rest of underparts from throat to undertail-coverts olive yellow, dark on breast and flanks. Bill pale black and dark grey eye with greyish-white eye ring. The plumage was very worn, with no sign of moult except for a wrinkled brood patch which was being re-feathered. Measurements (mm) were: wing 90, tail 83, bill (to skull) 22.8, tarsus 21.7. Weight recorded at the time of capture (12.30 hrs local time) was 27.0 g. A faecal sample, examined under binocular microscope, consisted of coleopteran remains only.

The description and mensural data are in agreement with those given for *A. m. striifacies* by Keith *et al.* (1992), but the weight was lower, possibly because the bird had just arrived from its breeding area, the nearest being the Ulugurus some 200 km away.

The solitary habit of the Stripe-cheeked Greenbul (Keith *et al.* 1992), and possibly its rarity in the study area, may be reasons why it has not been discovered before in Pugu Hills despite a fairly long history of ornithological investigations there (Harvey & Howell 1987). Alternatively, this new record may be an indication of recent extension of the species' wintering area.

The record was made during a Ph.D. field study on Pycnonotids, a work sponsored by the Deutscher Akademischer Austauschdienst (Germany), with additional support from the Institut für Vogelforschung, Wilhelmshaven, and the GEF Biodiversity project in Tanzania. I very much thank them all.

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CHARLES O. F. MLINGWA

21 June 1995

BOOKS RECEIVED

Jones, D. N., Dekker, R. W. R. J. & Roselaar, C. S. 1995. *The Megapodes*. Pp. xx+262, 8 colour plates, text-figures, maps and sonagrams. ISBN 0-19-854651-3. Oxford University Press. £35. 25 × 20 cm.

This is the third in OUP's new series 'Bird Families of the World'. With only 22 recognised species in 7 genera, the megapodes lend themselves to comprehensive treatment in a moderately sized book such as this. Its general plan, as in others of the series, consists of a number of general chapters dealing with all biological aspects of main interest in the family concerned, followed by the species accounts. In this case the general chapters, dealing largely with the remarkable adaptations of a family unique in its breeding behaviour and little known to most ornithologists, are of outstanding interest. The species accounts are comprehensive, with distribution maps and sonagrams for the species whose voice has been studied. There cannot be any known fact of evolutionary, biogeographical or specific significance relating to these extraordinary birds that is not presented and discussed in this very well written and illustrated book.

Summers-Smith, J. D. 1995. *The Tree Sparrow*. Pp. xxii+205, 4 colour plates, 50 text-figures. ISBN 0-9525383-0-X. Published by the author; available from The Natural History Book Service, 2–3 Wills Road, Totnes, Devon TQ9 5XN. £24. 24 × 16 cm.

A meticulously detailed account of a bird whose only rival as a commensal of man is the House Sparrow, the subject of a monograph from the same pen 33 years ago, and whose range and population fluctuations in Britain and other parts of western Europe have remained an unsolved problem. Tree Sparrows occupy the urban niche of House Sparrows in the Far East, and the details and probable history of this association are explored in depth. A huge literature has been surveyed; there are 19 pages of references, many of them obscure, and 15 appendices. This is a monograph in the true sense, enlivened by drawings by Robert Gillmor and reproductions of Tree Sparrows in Oriental art.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the Editor, Dr D. W. Snow, The Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*.

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Correspondence on all other matters should go to the Hon. Secretary, Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA, U.K. For details of Club Meetings see inside front cover.

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

COMMITTEE

Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 116 No. 2 June 1996

FORTHCOMING MEETINGS

Tuesday, 16 July 1996. Dr Roger Wilkinson will speak on **"Zoo breeding programmes for endangered species".** Having spent six years in Nigeria, teaching and research at Bayero University, Kano, he is now Curator of Birds at Chester Zoo, and Secretary of the West African Ornithological Society.
Applications to the Hon. Secretary by 2 July, please.

Tuesday, 17 September 1996. Robin Prytherch will speak on **"Buzzards in Avon—a success story".** For 23 years Robin worked on many programmes for the BBC Natural History Unit in Bristol, and was a key member of the *Birdwatch* team. He now works freelance as an ornithologist, wildlife illustrator and film producer. Always interested in birds of prey, he has studied Buzzards in Avon, since 1980.
Applications to the Hon. Secretary by 3 September, please.

Tuesday, 5 November 1996. Nigel Hunter will speak on **"Birds of Botswana".** Nigel has spent the past 13 years in Botswana, including four years as Coordinator of Land Use Planning (1986–90), and the last five years as Director of Wildlife and National Parks (1990–95). He is currently back in the UK, working as Head of Wildlife Management at the Natural Resources Institute.
Applications to the Hon. Secretary by 22 October, please.

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London SW7, at 6.15 p.m. for 7 p.m. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from 6.15, and a buffet supper, of two courses followed by coffee, is served from about 7.00. (A vegetarian menu can be arranged if ordered at the time of booking.) Informal talks are given on completion.

Overseas Members visiting Britain are particularly welcome at meetings. For details in advance, please contact the Hon. Secretary: Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA.
Tel/Fax: 01730-825280 for late bookings and cancellations.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 116 No. 2 Published 30 June 1996

The eight hundred and fifty-fifth meeting of the Club was held in the Ante-room of the Sherfield Building at Imperial College, on Tuesday 23 January 1996, at 6.15 p.m. 27 Members and 6 Guests attended.

Members present were: D. GRIFFIN (*Chairman*), Professor R. J. CHANDLER (*Speaker*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, J. H. R. BOSWALL, Mrs D. M. BRADLEY, Dr K. B. BRIGGS, P. J. BULL, D. R. CALDER, Cdr M. B. CASEMENT RN, Revd T. W. GLADWIN, C. A. R. HELM, N. HUNTER, R. H. KETTLE, Dr C. F. MANN, D. J. MONTIER, Mrs A. M. MOORE, R. G. MORGAN, R. E. F. PEAL, R. C. PRICE, Dr R. P. PRŶS-JONES, Dr C. RYALL, R. E. SCOTT, P. J. SELLAR, N. H. F. STONE, C. W. R. STOREY.

Guests attending were: J. BARRINGTON, Mrs J. BULL, Mrs J. GLADWIN, Mrs M. MONTIER, P. J. MOORE, Mrs H. PRICE.

After dinner, Professor Richard Chandler gave an illustrated talk on "Waders in Western Australia".

Almost a million waders from the eastern Palearctic spend their non-breeding season in the northern part of Western Australia. The most numerous species are Great Knot *Calidris tenuirostris*, Bar-tailed Godwit *Limosa lapponica*, Greater Sand Plover *Charadrius leschenaultii*, Little Curlew *Numenius minutus* and Red-necked Stint *Calidris ruficollis*, whose maximum counts together total over 500,000. Australian endemic waders occur in far smaller numbers, of which Red-capped Plover *Charadrius ruficapillus*, with non-breeding numbers of up to 15,000, are much the most numerous. Though non-breeding individuals of most of the Palearctic species can be found throughout the year, they only occur in significant numbers between September and April/May.

Figure 1. Banded Stilts with chicks at Lake Ballard, Western Australia, 9 April 1995. (Photo: R. J. Chandler.)

Departure depends on species, most leaving in March and April having already attained their breeding plumage.

The waders are attracted by the extensive low-tide mud flats along the 600 km coast between Broome and Port Hedland, and by the equally extensive and usually dry semi-desert grasslands just inland from the coast.

The Australian endemic Banded Stilts *Cladorhynchus leucocephalus* breed opportunistically at inland salt lakes which only hold water after the infrequent inland rains. Consequently, individual stilts probably breed only at irregular intervals perhaps as long as several years. The remoteness of their breeding sites is such that many of the details of their breeding biology are incompletely known, and breeding colonies have only been witnessed on a handful of occasions.

Their breeding biology is unique for waders in several respects. They are communal breeders, the largest colony recorded to date being 179,000 birds. The chicks have completely white downy plumage (Fig. 1), and join crèches (typically numbering a few tens to a few hundreds in size) shortly after hatching, feeding (on brine shrimps) in swimming groups, accompanied by a few adults. Some chicks wander substantial distances before fledging.

The talk was illustrated with slides showing all the species that were discussed.

The eight hundred and fifty-sixth meeting of the Club was held in the Ante-room of the Sherfield Building at Imperial College, on Tuesday 20 February 1996, at 6.15 p.m. 21 Members and 5 Guests attended, despite difficult travel conditions; 12 additional members and guests were obliged to cancel plans to come, due to heavy snow.

Members present were: D. GRIFFIN (*Chairman*), Dr J. A. JOBLING (*Speaker*), Miss H. BAKER, P. J. BELMAN, Mrs D. BRADLEY, Dr M. J. CARSWELL, Cdr M. B. CASEMENT RN, Professor R. J. CHANDLER, Dr R. A. CHEKE, S. J. FARNSWORTH, F. M. GAUNTLETT, A. GIBBS, R. H. KETTLE, B. A. E. MARR, D. J. MONTIER, R. G. MORGAN, R. E. F. PEAL, P. J. SELLAR, S. A. H. STATHAM, C. W. R. STOREY, Mrs F. E. WARR.

Guests attending were: D. COUZENS, Mrs M. H. GAUNTLETT, Mrs S. GRIFFIN, Mrs F. FARNSWORTH, Mrs M. MONTIER.

After dinner, James Jobling gave an illustrated talk based on his book *A Dictionary of Scientific Bird Names*. An abridged version of the talk will appear as a paper in a forthcoming issue of the *Bulletin*.

Species composition, function and home-range of mixed-species bird flocks in a primary cloud forest in Ecuador

by Bent Otto Poulsen

Received 10 May 1995

Few papers have previously focused on mixed-species flocks in high-altitude humid forests (Macdonald & Henderson 1977, Moynihan 1979, Remsen 1985). Macdonald & Henderson worked in Kashmir, Moynihan described compositions of flocks from South America including central Ecuador, while Remsen focused on flock compositions in Bolivia. In this paper I present data on species composition and size of mixed-species flocks from southern Ecuador, and discuss their possible function. I also present data on the size of a flock's home-range, hitherto unknown from this altitude.

Study area

From March to May 1992 I studied mixed-species bird flocks at Cajanuma (04°06′S, 79°09′W), Podocarpus National Park, Loja Province, Ecuador. The study plot was situated in an area of temperate (montane) cloud forest at 2675–2975 m, around the park headquarters. Long periods with fog, clouds and rain prevail at Cajanuma from February to mid-October. A less wet period with some sunshine and clear sky lasts from mid-October through January (Apolo 1984, Bloch *et al*. 1991). This humid weather regime is caused by the topographic setting. Cajanuma is on the western slope of the easternmost ridge of the Andes of southern Ecuador. The altitude of the ridge above Cajanuma is only 3660 m. Hence, the weather at Cajanuma is heavily influenced by the extremely humid climate on the eastern side (Apolo 1984). The predominant vegetation is a primary cloud forest with patches of *Chusquea* bamboo on naturally- and man-disturbed slopes (Gentry 1992). The composition of trees around Cajanuma is almost the same as in the corresponding zone on the eastern slope (Madsen 1989). Epiphytes are richly developed, creating a high structural complexity and heterogeneity with many microhabitats.

Methods

Birds were mist-netted and colour-ringed for individual identification. Observations of colour-ringed individuals, and of species composition, were used to distinguish between different flocks.

The same trails were walked every day from 0600 to 1800 hrs in all kinds of weather. Flocks were observed using waterproof 10 × 42 Leica binoculars. Species were also identified by voice. I distinguished between canopy, understorey and combined flocks. In the field and when analysing the material, I distinguished between flock encounters where all species and individuals were recorded and flock encounters

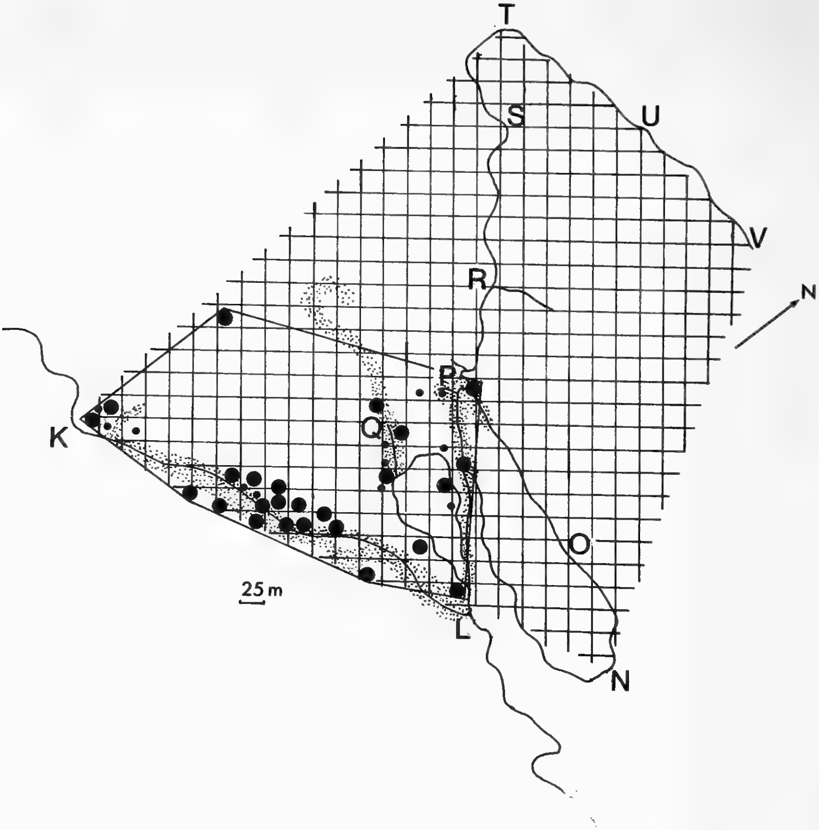

Figure 1. Map of study area at Cajanuma showing minimum principal home-range of flock A. Large dots=flocks with colour-ringed individuals; small dots=incompletely observed flocks where colour-rings were not seen, but composition similar to that of flock A; stippled=secondary scrub with bamboo.

where only some species and individuals were recorded. Due to the limited view in the forest, the majority of flock records had to be referred to the latter type. Accordingly, calculations on structure are approximations given as minimum and maximum mean numbers. For each flock encounter, the location, size and composition of the flock were recorded. To determine the locations of all encounters I used a detailed map of the area (Fig. 1), constructed by use of a bearing compass. Landmarks were established along the trails as coloured flags on poles raised high above the canopy and as colour-marks close to the ground. The approximate linear distances between the landmarks K and L and P and L on the ground were measured on the terrain, and adjustments for differences in altitude were made using trigonometric functions. Angles between the directions to various landmarks were imposed on a gridded paper to establish reciprocal positions. Other distances were measured subsequently from the gridded map. Finally, the area of the study plot was estimated counting the grid units of Figure 1. Observations of flocks were plotted on the map to serve as a basis for calculating a minimum principal flock home-range.

Results

Birds were mist-netted during 35,911 net-metre-hours (12 m net open for 5 hrs=60 net-metre-hours). A total of 514 birds were caught and of these, 252 potential flock-participating birds were colour-ringed. The ringed birds comprised 43 species. Altogether, 144 observations of mixed flocks, with a total of 55 different species, were made. A total of 164 observations of colour-ringed individuals were recorded.

Composition

The size of the principal study area bounded by K–T–U–V–N–L–K was *c.* 27 ha. Within this area at least four flocks were present. Flocks A, C and D contained species that foraged at all levels; flock B comprised only understorey species. The species composition of flock A was primarily centred around the insectivorous species Pearled Treerunner *Margarornis squamiger*, Streaked Tuftedcheek *Pseudocolaptes boissonneautii*, Blue-backed Conebill *Conirostrum sitticolor*, Grey-hooded Bush-Tanager *Cnemoscopus rubrirostris* and Black-headed Hemispingus *Hemispingus verticalis*, all with colour-ringed individuals (1, 1, 3, 2 and 2, respectively) frequently present, but the flock also contained other species attending less frequently (those with an asterisk in Appendix). None of the above mentioned colour-ringed individuals were ever seen in other flocks.

The understorey flock, B, was built around Black-capped Hemispingus *Hemispingus atropileus*, Plushcap *Catamblyrhynchus diadema*, Rufous Wren *Cinnycerthia unirufa* and Yellow-billed Cacique *Cacicus holosericeus*, but also occasionally contained Rufous-naped Brush-Finch *Atlapetes rufinucha*, Pale-naped Brush-Finch *Atlapetes pallidinucha* and Black-crested Warbler *Basileuterus nigrocristatus*. The two remaining flocks, C and D, were similar in composition to A, but with different individuals.

Many species, normally regarded as solitary (Fjeldså & Krabbe 1990), joined mixed flocks at Cajanuma. Three species of hummingbirds, Buff-winged Starfrontlet *Coeligena lutetiae*, Rainbow Starfrontlet *Coeligena iris* and Tourmaline Sunangel *Heliangelus exortis*, were seen attending mixed flocks and foraging both on insects and nectar. Even two terrestrial species, Rufous Antpitta *Grallaria rufula* and Undulated Antpitta *Grallaria squamigera*, were recorded foraging in mixed flocks. Compared to the number of observations of solitary antpittas ($n=36$) (Poulsen 1993), flock participation ($n=2$) was highly unusual. Sometimes a Great Thrush *Turdus fuscater*, Glossy-black Thrush *Turdus serranus* or Band-tailed Pigeon *Columba fasciata* suddenly found itself within a passing flock, but all three species appeared to be inactive in the flock and unaffected, and so were considered non-participants.

TABLE 1

The relative importance of different families as participants in mixed-species flocks at Cajanuma. Rank refers to the preceding column

Family	No. of flock encounters with family	% of total flock encounters (144)	Rank of family	Flock birds seen from family (A)	No. of flock species available from family (B)	Index A/B	Rank
Thraupidae	131	91.0	1	664	15	42.3	5
Parulidae	111	77.1	2	278	5	55.6	2
Coerebidae	102	70.8	3	213	5	42.6	4
Furnariidae	82	56.9	4	226	3	75.3	1
Tyrannidae	51	35.4	5	109	8	13.6	8
Fringillidae	46	32.0	6	92	2	46	3
Troglodytidae	34	23.6	7	84	2	42	6
Cotingidae	28	19.4	8	35	1	35	7
Trochilidae	8	5.6	9	8	3	2.7	12
Picidae	7	4.9	10	7	3	2.3	13
Icteridae	4	2.8	11	8	1	8	9
Dendrocolaptidae	3	2.1	12	3	1	3	11
Trogonidae	2	1.4	13	3	1	3	11
Formicariidae	2	1.4	13	2	2	1	14
Corvidae	2	1.4	13	4	1	4	10

Structure

Only 12.7% (7 of 55) of the species participating in flocks had minimum intraspecific group-sizes >2. In some of these species, as in several non-participating species, adults were accompanied by juveniles. Many species are singing in January and March, but the song activity is also high in August–September (N. Krabbe pers. comm.). The other participating species (n=48) were represented only by 1–2 individuals in each flock. Thirteen of 55 species (23.6%) were regular followers (Appendix), i.e. participated in >25% of the flock encounters (Powell 1985). Ninety-one percent of all encounters included species of the family Thraupidae. More than half of the encounters also contained species of Parulidae, Coerebidae and Furnariidae (Table 1). Thraupidae had almost twice as many flock-participating species (n=15) as Tyrannidae (n=8). Considering the number of birds seen in flocks per available species (Index: A/B, Table 1), Furnariidae characterised flocks more than Parulidae, Fringillidae, Coerebidae and Thraupidae.

When the number of individuals colour-ringed was compared to the number re-sighted subsequently, striking differences appeared between three groups (Table 2). There were fewer re-sightings of colour-ringed, partially insectivorous (principally frugivorous) Thraupidae in mixed flocks than of insectivorous Thraupidae and insectivorous Furnariidae (Yates corrected χ^2=12.65, P<0.01, f.d.=2). Understorey species difficult to observe were excluded from this calculation.

TABLE 2

The number of colour-ringed individuals and the number of subsequent re-sightings of colour-ringed individuals in mixed-species flocks for two families (three guilds) at Cajanuma

	Partially insectivorous Thraupidae	Insectivorous Thraupidae	Insectivorous Furnariidae
Colour-ringed individuals	38	6	9
Re-sightings in mixed flocks	20	14	23

As many as 76.4% ($n=110$) of all flock encounters ($n=144$) had species in all vertical layers; in only 16% ($n=23$) were the birds restricted to the canopy, and in 7.6% ($n=11$) to the understorey.

Home-range

Flock A, which comprised canopy and understorey species, used a minimum principal home-range of 8 ha (Fig. 1) with an altitudinal range of *c.* 125 m. At its largest, this flock contained at least 15 species and 27 individual birds. Flocks B, C and D roamed over areas of undetermined size from within the small loop-trail towards O, from somewhat above P towards the K–T ridge and north to somewhere between R and S, and from halfway between P–L to N and somewhere up the trail east of L, respectively.

Discussion

Structure and function

The insectivorous Furnariidae and Parulidae were the most frequent families in flocks when the number of birds seen in flocks per available species was considered (Table 1). Together with the data presented in Table 2 (fewer re-sightings in flocks of colour-ringed, partially insectivorous Thraupidae than of insectivorous Thraupidae and insectivorous Furnariidae) this suggests a looser association with mixed flocks of partially insectivorous species than of purely insectivorous species, which implies that birds join mixed-species flocks mainly to consume insects, or leave flocks to feed on other items. A negative correlation between insect activity and flocking at Cajanuma also suggests that mixed-species bird flocks form to feed on insects (Poulsen in press). It also creates a high degree of dynamics in flock size when widely roaming partially insectivorous birds like tanagers are constantly leaving and joining a flock.

Home-range

The ridge running from T to K was apparently a border of flock A's home-range. Flocks seen to the west side of the ridge never contained individuals with colour-rings. This was also the case with flocks observed above P. Flock A only ranged slightly below K–L (the road), probably as a consequence of rather open forest with a lot of bamboo. A principal home-range of minimum 8 ha (flock A) is within the limits (1–10 ha) found in most studies covering humid lowland and mid-altitudes (Bushkirk *et al.* 1972, Munn & Terborgh 1979, Powell 1985). Terborgh *et al.* (1990) found at Manú in Amazonian Peru mean home-ranges of >20 ha for canopy flocks and 4–5 ha for understorey flocks (similar numbers of individuals as in Cajanuma). In this context the intermediate (between 4–5 and 20 ha) principal home-range size at Cajanuma can be explained by the flock comprising canopy as well as understorey species, and/or by use of a lower-quality forest with patches of bamboo, which necessitates the exploitation of a larger area.

Summary

Mixed-species bird flocks were studied in an Ecuadorian primary cloud forest at 2675–2975 m altitude. Birds were mist-netted and colour-ringed to permit individual identification. Considering the number of birds seen in flocks per available species, the insectivorous Furnariidae and Parulidae characterised flocks more than Fringillidae, Coerebidae and Thraupidae. There were fewer re-sightings of colour-ringed, partially insectivorous Thraupidae in mixed flocks than of insectivorous Thraupidae and insectivorous Furnariidae. Together with the families primarily characterising flocks this suggests a looser association with mixed flocks of partially insectivorous species than of purely insectivorous species, which implies that birds join mixed-species flocks mainly to consume insects. Home-range, so far unknown for flocks at this altitude, was determined by plotting flock observations on a detailed map. The best documented flock had a minimum principal home-range of 8 ha, with an altitudinal range of *c.* 125 m.

Acknowledgements

The Danish National Science Research Council, Copenhagen (grant 11-9116) and the Zoological Museum, University of Copenhagen, provided financial support for this study. I thank Amy Frølander and Pablo A. Cueva for help during the fieldwork and Niels and Judith Krabbe for their hospitality in Quito. The Ministerio de Agricultura y Ganadería granted permission to do research in Ecuador. David Espinosa kindly provided cooperation with Universidad Nacional de Loja. I thank Jon Fjeldså, Jan Komdeur and Jørgen Rabøl for comments on an earlier draft of the manuscript, Mary E. Petersen for revising the English text and an anonymous referee for review.

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APPENDIX

Species at Cajanuma seen in mixed flocks, intra-specific group-sizes given as minimum and maximum mean numbers, number of times species were recorded in flocks, and their percentages of the 144 flocks seen. Rank refers to the preceding column. *= species attending flock A less frequently than the five principal species mentioned in the text

Family and species	Average group size	Times seen in flocks	% of total	Rank
Trochilidae				
Coeligena iris	1.0	1	0.7	30
Coeligena lutetiae	1.0	4	2.8	24
Heliangelus exortis	1.0	3	2.1	28
Trogonidae				
Trogon personatus	1.5	2	1.4	29
Picidae				
Veniliornis nigriceps	1.0	6	4.2	25
Piculus rivolii	1.0	1	0.7	30
Campephilus pollens	2.0	1	0.7	30
Dendrocolaptidae				
Lepidocolaptes affinis	1.0	3	2.1	28
Furnariidae				
Margarornis squamiger	2.3–3.3	65	45.1	3
Pseudocolaptes boissonneautii	1.6–2.3	45	31.3	8
Synallaxis elegantior	2.0	3	2.1	28
Formicariidae				
Grallaria squamigera	1.0	1	0.7	30
Grallaria rufula	1.0	1	0.7	30

APPENDIX
Continued

Family and species	Average group size	Times seen in flocks	% of total	Rank
Cotingidae				
*Pipreola arcuata**	1.3	28	19.4	16
Tyrannidae				
Myiotheretes fumigatus	1.0	2	1.4	29
*Ochthoeca rufipectoralis**	1.3–2.0	8	5.6	23
Myiophobus lintoni	7.0–8.5	4	2.8	27
Pyrrhomyias cinnamomea	1.4–2.0	9	6.3	22
*Mecocerculus stictopterus**	1.5–2.0	28	19.4	16
Mecocerculus leucophrys	1.0	1	0.7	30
*Phyllomyias nigrocapillus**	1.0–2.0	11	7.6	20
Phyllomyias uropygialis	1.0	1	0.7	30
Corvidae				
Cyanolyca turcosa	2.0	2	1.4	29
Troglodytidae				
Cinnycerthia unirufa	2.6–4.3	29	20.1	15
Troglodytes solstitialis	1.4	5	3.5	26
Thryothorus euophrys	1.0	1	0.7	30
Icteridae				
Cacicus holosericeus	2.0	4	2.8	27
Parulidae				
*Dendroica fusca**	1.0–2.0	8	5.6	23
*Myioborus melanocephalus**	1.8–2.4	82	56.9	1
*Basileuterus nigrocristatus**	1.2–2.0	46	31.9	7
Basileuterus luteoviridis	1.9–3.3	31	21.5	14
*Basileuterus coronatus**	1.0–2.0	7	4.9	24
Coerebidae				
Conirostrum sitticolor	1.8–2.2	57	39.6	5
Conirostrum albifrons	1.0	2	1.4	29
*Diglossa albilatera**	1.0	25	17.4	17
*Diglossa cyanea**	1.2–2.0	68	47.2	2
Diglossa caerulescens	1.0	3	2.1	28
Diglossa lafresnayii	1.0	8	5.6	23
Thraupidae				
*Iridosornis rufivertex**	1.8–2.8	37	25.7	13
*Anisognathus lacrymosus**	1.4–2.0	60	41.7	4
*Anisognathus igniventris**	1.7–2.0	10	6.9	21
Buthraupis eximia	1.0	2	1.4	29
*Buthraupis montana**	2.4–3.6	17	11.8	19
Chlorornis riefferii	1.7–2.3	9	6.3	22
Dubusia taeniata	1.5–2.0	17	11.8	19
*Tangara vassorii**	1.4–2.3	47	32.6	6
Thraupis cyanocephala	1.8	4	2.8	47
Piranga rubriceps	1.0	2	1.4	29
Chlorophonia pyrrhophrys	1.5	4	2.8	27
Cnemoscopus rubrirostris	2.2–3.7	41	28.5	10
Hemispingus verticalis	2.3–3.6	40	27.8	11
Hemispingus atropileus	3.2–3.8	39	27.1	12
Catamblyrhynchus diadema	1.4–2.0	18	12.5	18
Fringillidae				
*Atlapetes rufinucha**	1.6–2.1	43	29.9	9
Atlapetes pallidinucha	1.8–3.0	14	9.7	20

A new subspecies of the Pearly-eyed Thrasher *Margarops fuscatus* (Mimidae) from the island of St. Lucia, Lesser Antilles

by Orlando H. Garrido & J. V. Remsen, Jr

Received 31 May 1995

The Pearly-eyed Thrasher *Margarops fuscatus*, endemic to the West Indies, is found in the southern Bahama islands (north of Eleuthera), Beata Island off the Dominican Republic, Puerto Rico, the Virgin Islands, and in the Lesser Antilles south to St. Lucia, and also on some of the islands off the coast of Venezuela (AOU 1983). Geographic variation across this broad range involves slight colour differences, with three subspecies currently recognized (Bond 1956, Davis & Miller 1960): (1) nominate *fuscatus*, from the Bahamas, Beata Island, Puerto Rico (including all satellite islands), and the Virgin Islands to the northern Lesser Antilles to Antigua and Barbuda; also La Désirade; (2) *densirostris*, from Guadeloupe (not including La Désirade) to St. Lucia; and (3) *bonairensis*, on Bonaire and also Horquilla in the Los Hermanos Archipelago off Venezuela.

After initially noting that specimens from St. Lucia were distinctly darker and larger than those from other islands, we studied colour and size variation of study skins of *Margarops fuscatus* from throughout the Caribbean housed in several major collections of West Indian birds (see Acknowledgements). We based our colour comparisons mainly on the most recent study skins, particularly those taken by Albert Schwartz, R. F. Klinikowski, and Donald W. Buden (housed at the Museum of Natural Science, Louisiana State University). Body mass data were also provided by Wayne Arendt and John Faaborg.

Colour variation

We found much seasonal and age variation in the amount of white edging on the feathers of the upper secondaries and tertiaries. The width of these edges may also vary among the populations of different islands, but the differences are not consistent. The extent and shape of the white tips of the rectrices also tend to vary among populations, but the differences are not discrete. The breast markings also vary slightly among populations in shade and size.

Of the three races, *bonairensis* stands apart in being much paler. Phelps & Phelps (1948) described it as differing only as "brown markings are a more greyish olive, both above and below", without emphasizing the paleness *per se*. Although the specimens from Horquilla are assigned to *bonairensis* (Bond 1956, Davis & Miller 1960), Phelps & Phelps (1948) pointed out that this may derive from the assumption that they are the same as those on Bonaire rather than from direct comparisons. Bond (1952) compared three specimens from the Los Hermanos Islands to *M. f. fuscatus* and found that the Hermanos

TABLE 1

Specimen measurements (in mm) for populations of *Margarops fuscatus*. The first number is the mean, followed by the standard deviation (with *n* in parentheses). The "Bahamas" category refers to specimens for which no island was specified

Island	Sex	Wing length	Tail length	Culmen length	Tarsus length
"Bahamas"	♂	137, 3.2 (11)	111, 3.0 (9)	25, 0.8 (11)	35, 1.5 (11)
	♀	140, 2.8 (9)	109, 3.6 (8)	24, 1.7 (9)	35, 1.4 (9)
San Salvador	♂	137, 2.8 (14)	110, 3.4 (36)	23, 1.2 (31)	36, 1.9 (37)
	♀	135, 4.9 (15)	110, 3.6 (32)	25, 1.4 (34)	36, 1.9 (39)
Rum Cay	♂	136, 4.3 (4)	113, 2.6 (4)	26, 1.0 (4)	38, 1.7 (4)
	♀	138, 1.1 (2)	113, 3.9 (2)	26, 1.0 (2)	36, 1.7 (2)
Caicos Is.	♂	136 (1)	113, 3.0 (19)	25, 0.8 (19)	38, 1.4 (18)
	♀	139 (1)	110, 2.1 (6)	26, 1.3 (6)	38, 0.5 (6)
Great Inagua	♂	141, 3.9 (12)	113, 4.5 (21)	26, 0.8 (22)	38, 0.9 (22)
	♀	133, 9.2 (2)	113, 2.6 (6)	26, 1.6 (6)	39, 0.6 (6)
Jamaica	♂	141 (1)	112 (1)	25 (1)	34 (1)
Beata	♂	141, 3.9 (2)	117, 1.4 (2)	27, 0.5 (2)	39, 1.1 (2)
	♀	139, 4.8 (3)	112, 2.0 (3)	28, 0.7 (2)	39, 1.2 (3)
Mona	♂	140, 3.4 (28)	113, 3.5 (27)	26, 0.6 (28)	38, 1.6 (29)
	♀	137, 2.5 (8)	112, 4.3 (13)	27, 1.1 (16)	38, 1.4 (15)
Puerto Rico	♂	139, 4.6 (13)	113, 5.3 (22)	26, 1.7 (23)	38, 1.1 (22)
	♀	137, 4.1 (22)	111, 3.6 (21)	27, 1.1 (22)	36, 1.3 (23)
Desecheo	♂	135, 2.5 (2)	112, 1.4 (2)	26, 1.3 (2)	37, 0.6 (2)
	♀	139, 2.5 (12)	113, 3.1 (12)	27, 1.4 (12)	38, 0.5 (6)
Vieques	♂	139, 3.3 (11)	113, 3.2 (11)	26, 1.2 (11)	38, 1.3 (11)
	♀	139 (1)	112 (1)	26 (1)	39 (1)
Culebra	♂	137, 3.4 (6)	115, 3.3 (6)	26, 1.2 (6)	37, 1.0 (6)
	♀	137, 5.3 (5)	114, 3.4 (5)	26, 2.0 (5)	36, 0.8 (5)
Culebrita	♂	141, 1.4 (2)	114, 5.0 (2)	25, 0.6 (2)	38, 0.7 (2)
	♀	140 (1)	110, (1)	24 (1)	39 (1)
St. Thomas	♂	138, 5.0 (10)	111, 3.5 (12)	26, 2.1 (15)	37, 1.0 (15)
	♀	137, 4.0 (11)	111, 5.1 (12)	28, 1.7 (12)	38, 1.9 (12)
St. John	♂	134 (1)	107 (1)	26 (1)	36 (1)
	♀	139, 2.1 (2)	109, 1.4 (2)	25, 1.2 (2)	38, 2.2 (2)
Tortola	♂	143, 1.3 (4)	115, 2.8 (9)	26, 1.1 (9)	37, 1.0 (9)
	♀	140, 0.0 (3)	114, 3.2 (3)	27, 0.8 (3)	38, 0.5 (3)
St. Croix	♂	141, 5.3 (2)	114, 7.2 (22)	26, 1.0 (21)	37, 0.5 (22)
	♀	138, 3.2 (17)	111, 3.5 (17)	26, 0.8 (16)	37, 0.6 (17)
Virgen Gorda	♂	134, 0.7 (1)	108, 3.2 (10)	26, 0.8 (11)	38, 1.7 (11)
	♀		107, 3.4 (4)	25, 0.8 (4)	38, 0.5 (4)
Sombrero	♂		110 (1)	23 (1)	37 (1)
Anguilla	♂	140, 4.6 (2)	109, 5.7 (7)	27, 0.8 (7)	37, 1.7 (7)
St. Marten	♂	139, 2.1 (2)	116, 1.4 (2)	27, 0.6 (2)	38, 2.0 (2)
	♀	137, 3.0 (3)	112, 3.2 (3)	26, 0.7 (2)	36, 2.1 (3)
Saba	♂	142, 3.5 (2)	112, 0.7 (2)	28, 1.3 (2)	38 (1)
	♀	139, 3.7 (4)	112, 4.1 (4)	27, 1.3 (4)	38, 1.0 (4)
St. Eustatius	♂	140, 1.8 (8)	112, 3.5 (21)	27, 1.1 (20)	38, 1.2 (21)
	♀	138, 1.3 (5)	112, 1.3 (9)	27, 1.1 (9)	38, 0.6 (9)
St. Kitts	♂	141, 4.7 (7)	116, 3.0 (7)	26, 1.0 (8)	38, 0.8 (8)
	♀	134, 3.3 (6)	108, 4.0 (6)	28, 0.9 (6)	38, 1.2 (6)
Nevis	♂	137, 4.0 (4)	113, 2.4 (4)	27, 0.9 (4)	37, 1.1 (4)
	♀	136 (1)	112 (1)	28 (1)	36 (1)
Barbuda	♂	143, 2.5 (8)	115, 2.8 (8)	26, 1.1 (8)	38, 1.0 (8)
	♀	138, 2.1 (4)	113, 4.2 (4)	27, 1.5 (4)	38, 1.3 (4)
Antigua	♂	138, 1.8 (4)	113, 1.9 (39)	26, 1.3 (37)	38, 0.7 (41)
	♀	139, 3.4 (9)	114, 3.2 (18)	27, 1.1 (20)	38, 1.0 (19)

TABLE 1
Continued

Island	Sex	Wing length	Tail length	Culmen length	Tarsus length
Montserrat	♂	141, 3.1 (8)	118, 4.4 (8)	26, 1.0 (6)	38, 1.2 (8)
	♀	136, 4.9 (5)	108, 5.0 (5)	27, 1.1 (4)	38, 2.6 (4)
La Désirade	♂	138, 2.9 (10)	111, 4.2 (14)	27, 0.8 (10)	37, 0.6 (10)
	♀	137, 2.8 (9)	108, 3.6 (9)	27, 1.2 (9)	37, 0.9 (9)
Guadeloupe	♂	141, 5.5 (5)	111, 13.3 (6)	27, 1.7 (6)	37, 0.4 (6)
	♀	138, 4.3 (14)	111, 4.1 (13)	26, 1.1 (15)	37, 1.6 (15)
Dominica	♂	138, 2.9 (19)	108, 3.6 (20)	26, 1.3 (20)	35, 1.6 (19)
	♀	135, 3.9 (12)	107, 3.3 (12)	25, 0.8 (11)	35, 1.4 (11)
Martinique	♂	137, 0.0 (2)	108, 2.8 (2)	26, 2.1 (2)	37, 1.2 (2)
	♀	134, 0.7 (2)	113 (1)	26, 1.4 (2)	38, 1.1 (3)
St. Lucia	♂	148, 3.9 (11)	113, 4.2 (9)	27, 1.1 (11)	40, 1.0 (11)
	♀	144, 3.2 (14)	114, 4.5 (11)	27, 1.4 (14)	40, 1.5 (14)
Bonaire	♂	135, 3.1 (10)	113, 3.2 (10)	27, 1.2 (10)	37, 1.2 (10)
	♀	132, 3.8 (3)	111, 0.6 (3)	27, 1.5 (3)	37, 1.8 (3)

specimens "stand out in having the upper parts more greyish (olive grey)". Bond (1952) could not compare them directly to specimens from Bonaire, but stated that the Los Hermanos birds are "perhaps not quite as pale, at least on the under parts, they certainly agree better with *bonairensis* than with *fuscatus* as one would expect".

The other two subspecies, nominate *fuscatus* and *densirostris*, are weakly differentiated. Comparing specimens of the same age and degree of wear, we agree with Hellmayr's (1934) description of *densirostris* as being slightly darker brown above and below. Although the difference is not striking, it is enough that we also agree with Hellmayr's (1934) assignment of specimens from La Désirade to more distant nominate *fuscatus* rather than to *densirostris* of nearby Guadeloupe and Montserrat.

Although the population from St. Lucia has been treated previously under *M. f. densirostris*, we found that it differs in several characters from other populations. The white tail tip is larger, and the white edges of the inner secondaries are broader, sometimes almost twice as broad, as in any other population. The scaly marks of the breast and sides are bolder and darker and the underparts whiter than in any other population; thus, St. Lucia birds stand out immediately from other populations by the degree of contrast between the dark and pale portions of the breast.

Size variation

Linear measurements (Table 1) show no consistent pattern among islands other than the St. Lucia population being larger in wing and tarsus length. Of the 252 specimens measured, only 16 overlap the range of wing lengths in the St. Lucia sample in the appropriate sex category. The St. Lucia sample is also at the upper end of the means in tail length and bill length, and has the largest mean tarsus length. Body

TABLE 2
Body mass (in grams) of various populations of *Margarops fuscatus* (compiled by Wayne J. Arendt and John Faaborg)

island	mean	s.d.	range	*n*
Beata	96.4	4.79	89–103	8
Mona	99.5	6.51	91–113	19
Puerto Rico	104.0	10.11	80–136	291
Montserrat	101.8	8.35	78–134	189
La Désirade	92.5	7.12	78–105	18
Dominica	99.9	9.05	95–115	5
St. Lucia	126.6	10.13	116–140	6

mass data (Table 2) also show that the St. Lucia population is decidedly larger.

Thus the St. Lucia population is distinctive in both coloration and size. In the specimens we examined, birds from St. Lucia can be diagnosed with 100% certainty based on the characters above. Therefore, we propose to name it

Margarops fuscatus klinikowskii subsp. nov.

Holotype. (LSUM 142566). Male; De Barra, Dauphin Qtr., St. Lucia; collected 10 April 1962 by Albert Schwartz.

Paratypes (all St. Lucia). Dauphin Qtr., De Barra; two collected 7 April 1963 by A. Schwartz (LSUMZ 142565, 142567; females). Castries Qtr., Barre de l'Ile; collected 17 January 1962 by R. Klinikowski (LSUMZ 142573; male). Castries Qtr., Barre de l'Ile; collected 10 January 1962 by R. F. Klinikowski (LSUMZ 142572; male). Castries Qtr., Forester; collected 8 April 1963 by S. John (LSUMZ 142571; female). Ause La Ruz Qtr., Meillet Rina, Nr. Millet; collected 17 April 1963 by S. John (LSUMZ 142570; male). Ause la Raye Qtr., 2.5 mi. n. Durandeau; collected 16 April 1963 by R. Thomas (LSUMZ 142569; male). La Sorcière, north slope, 600 ft.; collected by S. John (LSUMZ 142568; female).

Diagnosis. This subspecies can be distinguished from any other population of *M. fuscatus* by its larger size and greater contrast between breast and belly coloration. The underparts have a more scaly appearance, especially around the breast and the sides. The colour of the breast markings is a darker, more chocolate brown, contrasting more with the white of the underparts. The flank feathers are more conspicuously barred, with chevron-like or arrow-like marks. The white edges of the wing coverts are broad, almost twice as broad in some specimens as in individuals of any other population. The coloration of the upperparts does not differ noticeably from that of some populations of *M. f. densirostris*, although it seems slightly darker brown.

Description of the holotype. The dark brown chin blends to the irregularly streaked throat; the dark streaks are slightly paler brown than the chin and are fairly sharply demarcated from the whitish background. The least-streaked portion of the throat is in the upper centre portion, closest to the chin. The breast, sides, and flanks are irregularly scalloped and blend to a whitish, largely unmarked belly. The largest contour feathers of the breast have four bands of contrasting colour: the distal edges are whitish and sharply demarcated from a dark brown band (roughly same shade of brown as upperparts) whose apex forms a blunt point; this dark band blends to a much paler, buffy-brown band, which is then sharply demarcated from a largely concealed dark brown band that borders the feather shaft. The largest feathers of the sides and flanks have a similar pattern except that the inner buffy-brown band is whitish and broader and the innermost dark band is greatly reduced. The undertail coverts are whitish with conspicuous dark brown chevron-like bands.The upperparts and face are generally dark chocolate brown, noticeably darker in the loral region, which is the same colour as the chin. The crown, neck, and auriculars are slightly paler than the rest of the upperparts. The back feathers are narrowly edged with a paler brown, thereby giving the back a faintly scalloped appearance. The bill (dried) is dull yellowish brown, tinged darker at the tip. The legs (in dried skin) are dull brownish yellow. The whitish tips of the inner secondaries are quite conspicuous, roughly 4 mm at their maximum length. The tail is dark brown, similar in colour to the rest of the dorsal surface. The white tips of the rectrices increase in length from inner to outer rectrices, reaching a maximum length of roughly 19 mm on the inner webs of the outer rectrices. The type series is quite uniform. Both sexes are similar in coloration and measurements.

Etymology. Named for R. F. Klinikowski, in recognition of his major contributions to ornithology of the Caribbean by collecting thousands of bird specimens, most now housed at the Museum of Natural Science, Louisiana State University.

Distribution. Endemic to St. Lucia, Lesser Antilles.

Specimens examined. Margarops f. fuscatus: "Bahamas" (no island specified), 28 males, 19 females; San Salvador, 37 males, 32 females; Rum Cay, 4 males, 2 females; Caicos Bank, 9 males, 3 females; Great Inagua, 23 males, 6 females; Jamaica, 1 female; Beata Island, 2 males, 3 females; Mona, 29 males, 16 females; Puerto Rico, 23 males, 22 females; Desecheo, 2 males, 12 females; Vieques, 11 males, 1 female; Culebra Island, 6 males, 5 females; Culebrita Island, 2 males, 1 female; St. Thomas, 14 males, 14 females; St. John, 1 male, 2 females; Tortola, 10 males, 3 females; St. Croix, 22 males, 17 females; Virgen Gorda, 11 males, 4 females; Sombrero, 1 male; Anguilla, 7 males; Saba, 2 males, 4 females; St. Eustatius, 21 males, 9 females; St. Kitts=St. Christopher, 2 males, 1 female; Barbuda, 8 males, 4 females; Antigua, 35 males, 10 females. *Margarops fuscatus densirostris*. La Désirade, 8 males, 4 females; Martinique, 2 males, 3 females; Dominica, 4 males, 3 females; Guadeloupe, 1 male, 1 female. *Margarops fuscatus santaluciae*. St. Lucia, 11 males, 16 females. *Margarops fuscatus bonairensis*. Bonaire, 10 males, 3 females.

Remarks. Because the Pearly-breasted Thrasher is a common and relatively widespread species that is well-represented in museum collections, we were surprised that such a distinctive subspecies would remain undetected for so long. Therefore, we wonder how many other undescribed subspecies have yet to be discovered among West Indian birds.

Acknowledgements

We thank the curators, collection managers and technicians of the following collections for access to specimens in their care: Museum of Comparative Zoology, Harvard University; American Museum of Natural History; Carnegie Museum; National Museum of Natural History, Washington, D.C.; Academy of Natural Sciences of Philadelphia; and Field Museum of Natural History. We thank Wayne Arendt and John Faaborg for valuable data on body mass graciously given to us. Visits to collections were made possible in part by a grant to Garrido from the American Museum of Natural History. Also we are indebted to RARE Center for Tropical Conservation for the support to Garrido for visiting several museums and institutions.

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The birds of South Georgia

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Received 12 June 1995

The current checklist of South Georgia birds (Prince & Croxall 1983) is now over 13 years out of date. Until 1982, rather few ornithologists visited South Georgia and most bird records were provided by members of the British Antarctic Survey (BAS) from their year-round base at King Edward Point, Cumberland Bay, or from the summer-only field station at Bird Island (see Prince & Payne 1979, and Fig. 1). Since the South Atlantic conflict in 1982, however, BAS operations have been confined to Bird Island (a year-round base since September 1982) and, in several recent summers, field parties at Husvik. The greatest change, however, has been in the frequency of visits by naturalists and ornithologists, particularly on the ships of the Royal Fleet Auxiliary (RFA; and including many members of the Royal Naval Bird Watching Society), supplying the garrison at King Edward Point, and on tourist vessels (of which 8–10 currently visit South Georgia annually), principally visiting Grytviken in Cumberland Bay and the Bay of Isles. As a result, many more records of birds have been reported from South Georgia, including a number of species new to the Island. It seems timely, therefore, to produce a new annotated checklist, listing all species currently accepted by us as having occurred at South Georgia up to 31 December 1994.

The previous checklists explicitly restricted consideration to birds seen at South Georgia and over the waters of its continental shelf. However, now that the Government of South Georgia and the South Sandwich Islands has declared a Maritime Zone (SGMZ) around the islands out to approximately 200 nautical miles from South Georgia, it seems appropriate also to review the occurrence of species in this wider area. For this purpose, we have reviewed all records in Watson *et al.* (1971), Tickell & Woods (1972), Thurston (1982), the compilation by Tuck (1975) and all subsequent records summarised in *Sea Swallow*, the unpublished records of Dr R. R. Veit from seven research cruises between 1985/1986 and 1993/1994, the unpublished records of Dr W. R. P. Bourne and W. F. Curtis from numerous visits on board RFAs between 1982 and 1992, and the seabird-at-sea database of BAS, containing records from observers on BAS vessels (including routine logistic trips and scientific research cruises) since 1971/72.

We classify breeding species into seven categories, according to the size of their breeding population (Croxall *et al.* 1984, BAS unpublished data). These are: very rare (<10 pairs); rare (10–99); frequent (100–999); common (1000–9999); very common (10,000–99,999); abundant (100,000–999,999); very abundant (one million+). The main purpose of this paper, however, is to give details, especially for records since April 1982 (the closing date in the Prince & Croxall (1983) checklist), of the non-breeding visitors, migrants and vagrants, together

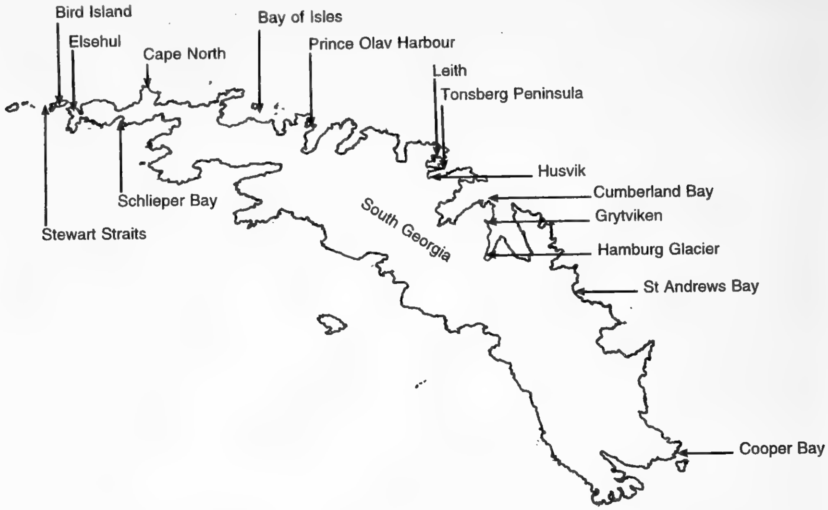

Figure 1. Map of South Georgia showing places mentioned in the text.

with an indication of their status in adjacent areas, especially the Falkland Islands and the Antarctic.

We divide non-breeding species into 4 categories: identification fully confirmed (A); identification probable but not confirmed beyond doubt (B); ship-assisted (C); introduced (D). The code is placed after the scientific name of the species. The identity of those providing unpublished records is indicated by initials, the full names being in the acknowledgements. A map of the general area (Fig. 2) shows the extent of the Maritime Zone around South Georgia, the extent of the continental shelf and the approximate position of the Antarctic Polar Front. Places mentioned in the text are shown in Figure 1.

EMPEROR PENGUIN *Aptenodytes forsteri* (A)

Vagrant. Seven previous records (Prince & Payne 1979, Prince & Croxall 1983). The eighth record was of an immature photographed at St Andrews Bay on 13 July 1985 (Clark 1986). To date all the records except one (of unknown age) are of immatures.

Immatures in moult occasionally visit Tierra del Fuego (Humphrey *et al.* 1970); there are three records for the Falkland Islands, two involving immatures (Woods 1988, Curtis 1994) and one record (of three immatures) at sea at 40°30′S, 54°34′W, not far south of the Subtropical Convergence (Rumboll & Jehl 1977). The species breeds at 38 localities around the Antarctic continent (Woehler 1993), the nearest to South Georgia being 2350 km distant.

KING PENGUIN *Aptenodytes patagonicus* (A)

Abundant, widespread breeder, whose population increase has averaged at least 5% per annum over the last 80 years (Croxall *et al.*

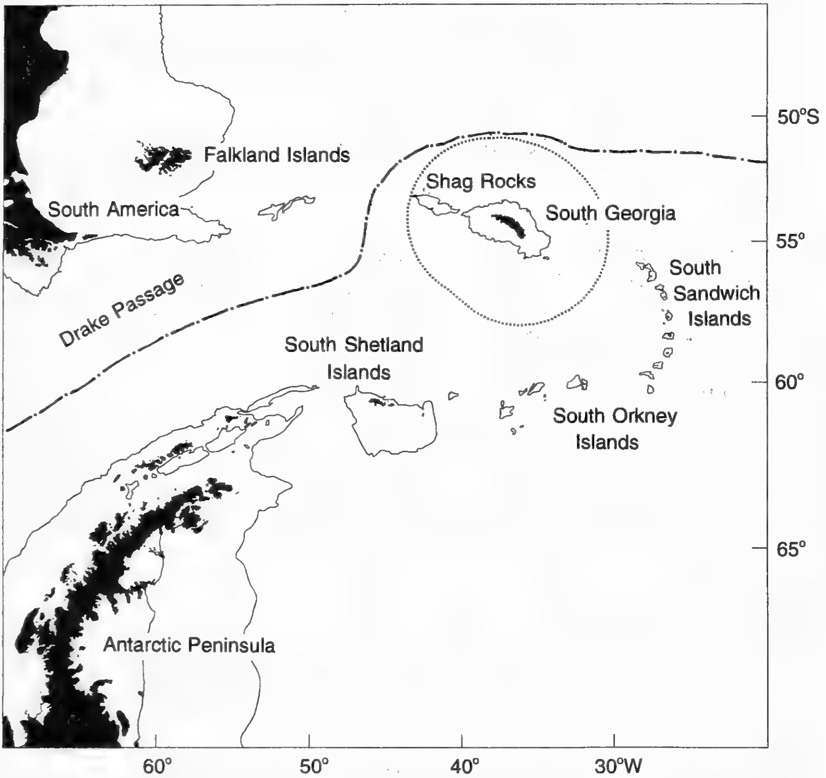

Figure 2. Map showing South Georgia in relation to South America and Antarctica together with the boundary of the South Georgia part of the South Georgia and South Sandwich Islands Maritime Zone, the 1000 m depth contours and the approximate position of the Antarctic Polar Frontal Zone.

1988). Recorded breeding for the first time at the South Sandwich Islands in 1995 (PH *in litt.*).

ADELIE PENGUIN *Pygoscelis adeliae* (A)

Vagrant. Four previous records (Prince & Payne 1979, Prince & Croxall 1983), of three immatures and one adult. Four recent records: adult, Olsen Valley, Husvik, 10 October 1991 (KR); Husvik, 20 December 1991 (HMcA), possibly the same bird; Elsehul, November 1991 (PH); adult, Bird Island, 22 and 23 November 1992 (RB, ILB, KR). This total of only eight records is surprising in view of the species' abundance in the southern Scotia Sea, with some 200,000 breeding pairs at the South Orkney Islands, 850 km south of South Georgia. However there have apparently been annual sightings of birds from the Cooper Bay area in recent years (PH *in litt.*).

CHINSTRAP PENGUIN *Pygoscelis antarctica* (A)

Common but very local breeder, mainly around south-east South Georgia. Little current evidence of any population change.

GENTOO PENGUIN *Pygoscelis papua* (A)

Abundant, widespread breeder. Breeding population numbers fluctuate greatly (Croxall & Rothery 1995), but no evidence of any systematic trend.

MACARONI PENGUIN *Eudyptes chrysolophus* (A)

Very abundant, but fairly local, breeder with the main concentrations at north-west South Georgia. Some evidence of decrease in the mid 1970s but populations subsequently stable.

ROCKHOPPER PENGUIN *Eudyptes chrysocome* (A)

Very rare and local breeder (Prince & Payne 1979). In most years, moulting immatures are seen associated with the main Macaroni Penguin colony on Bird Island. It is not known if these are birds of South Georgia or Falkland Islands origin; the population in the Falklands, although much smaller than 50 years ago, still numbers some 500,000 breeding pairs (Woods in press).

ROYAL PENGUIN *Eudyptes schlegeli* (A)

Vagrant. The first record for South Georgia was of a bird captured and photographed at Bird Island on 28–29 February 1984 (PAP, RLS, BCO). In the field the bird appeared slightly larger (especially in height) than the surrounding Macaroni Penguins. The bill measurements (length 59.5, depth 25.8 mm) are diagnostic of a female Royal Penguin (see Marchant & Higgins 1990). This is important because, although pale-faced possible Macaroni Penguins have never been reported from South Georgia, they are known from the Prince Edward, Crozet and Heard Islands (Barré *et al.* 1974, Berruti 1981, Downes *et al.* 1959); such birds (which may be local mutations or possibly hybrids with Royal Penguins) obviously resemble Macaroni Penguins very closely. Another bird, unmeasured, noticeably larger than accompanying Macaroni Penguins and showing a completely pale face, was seen at Bird Island on 30 December 1992 (KR, NJC, NH, JMC).

This species is confirmed to breed only at Macquarie Island, 12,500 km from South Georgia. The only records for the Falklands are of three pairs apparently breeding at New Island (Strange 1992); however, without supporting details, the possibility of pale-faced morphs of the Macaroni Penguin cannot be ruled out.

MAGELLANIC PENGUIN *Spheniscus magellanicus* (A)

Vagrant. Three previous records (Prince & Payne 1979, Prince & Croxall 1982). Four additional records: two immatures over the shelf at 53°44′S, 36°58′W on 10 April 1972 (BP); an adult seen near a Macaroni Penguin colony on Bird Island on 13 February 1990 (MPH, SW); an undated record from Bird Island during the 1990/91 summer (JMC, GL); one, of unknown age, at Olsen Valley, Husvik, on 13 March 1992 (OO). To date all records have occurred in the austral autumn.

This species breeds in large numbers in the Falkland Islands and on the Pacific and Atlantic coasts of southern South America; southern populations migrate north after breeding. It is often seen in the Drake Passage and has been recorded once at the South Shetland Islands (62°S), in January 1984 (Trivelpiece *et al.* 1987).

WANDERING ALBATROSS *Diomedea exulans chionoptera* (A)

Common, fairly widespread breeder, whose population has decreased steadily since the 1970s (Croxall 1979, Croxall *et al.* 1990).

ROYAL ALBATROSS *Diomedea epomophora epomophora* (A)

Vagrant. Six records, the first an adult at 53°39′S, 38°36′W on 22 December 1985 (RRV, MJW; seen twice more on the same day), the next an adult over the shelf at 53°40′S, 38°36′W on 28 December 1985 (RRV, MJW), followed by sightings of an immature at 53°44′S, 37°01′S on 7 February 1986 (RRV, MJW) and at 52°57′S, 42°11′W on 17 March 1986 (Bourne & Curtis 1986). Since the 1985/86 records, which were associated with an influx of warm surface water, there have only been two records, over the shelf at 54°23′S, 35°39′W on 11 February 1990 (MJW), and at 53°44′S, 38°15′W on 9 January 1994 (RRV). Although not easy to distinguish at sea from the Wandering Albatross, many experienced observers have failed to report it from South Georgia waters, so it is unlikely to be substantially overlooked.

The nominate subspecies frequently occurs around the Falkland Islands (Bourne & Curtis 1986, Woods 1988), especially over the continental shelf, and north to 23°S off Brazil. It breeds on the Auckland and Campbell Islands, New Zealand. The other subspecies *D. e. sanfordi*, which also breeds in New Zealand, at the Chatham Islands and on Taiaroa Head near Dunedin, also occurs frequently in Falkland waters, mainly off the north and east coasts (Curtis 1988, PH *in litt.*).

BLACK-BROWED ALBATROSS *Diomedea melanophris* (A)

Very common, fairly widespread breeder, whose population fluctuates considerably but has recently shown evidence of decline (Prince *et al.* 1994).

GREY-HEADED ALBATROSS *Diomedea chrysostoma* (A)

Very common, rather local breeder, mainly at northwest South Georgia. Its populations have decreased significantly since the 1980s (Prince *et al.* 1994).

SHY ALBATROSS *Diomedea cauta salvini* (A)

Vagrant. One previous record (Prince & Croxall 1983) of a bird captured and ringed in a Grey-headed Albatross colony at Bird Island on 28 February 1982. The following year a Shy Albatross was seen gliding over the same colony on 16 December 1983 (PAP, BCO). It is unknown if this was the same bird but it seems possible. On 13 March

1987, the bird that had been ringed at Bird Island in 1982 was recovered breeding on Penguin Island, Crozet Islands (6362 km from South Georgia), as a member of a newly-discovered colony of three pairs, being the first breeding records for the Crozet Islands (Jouventin 1990). Previously this subspecies was known to breed only at the Snares and Bounty Islands, New Zealand. It ranges east to the coasts of Peru, Chile and Argentina; records for South Africa are of uncertain status (Ross 1986).

There is one other record, of an albatross of the *D. cauta* group, seen in South Georgia waters at 52°06′S, 53°01′W on 26 January 1986 (MJW). Prince & Croxall (1983) noted that *D. c. cauta*, which is common (particularly juveniles) in South African waters (Ross 1986), may also occur in South Georgia waters, on the basis of an old specimen in Liverpool Museum (Bourne 1977). There are a few records of albatrosses belonging to the *D. cauta* group around the Falkland Islands (e.g. four birds in June–August 1984 (Bourne & Curtis 1985), five birds in March 1987 (Curtis 1988)).

LIGHT-MANTLED SOOTY ALBATROSS *Phoebetria palpebrata* (A)

Common, widespread breeder.

SOOTY ALBATROSS *Phoebetria fusca* (A)

Vagrant. Only four confirmed records, since the adult bird observed at Elsehul in January 1977 and at Bird Island in February 1977 (Prince & Croxall 1983). One was seen at 53°44′S, 36°58′W on 10 April 1977 (BP), associated with an influx of seabird species typical of warmer waters. Subsequent records are at 53°12′S, 43°08′W on 24 January 1986; 54°33′S, 38°26′W on 4 February 1986; 54°05′S, 38°26′W on 13 February 1986 (all RRV, MJW, NMH). These records were associated with the presence of warm surface waters, bringing a number of species of seabirds, characteristic of cool temperate waters, south to the vicinity of South Georgia (Hunt *et al.* 1992). Other reports, e.g. of 21 off South Georgia, are, as Cheshire (1993) noted, almost certainly due to the misidentification of Light-mantled Sooty Albatrosses. However, Thurston (1982) reported single birds at 58°S, 15°W and 57°S, 26′W (the latter close to the northern South Sandwich Islands) in January 1963.

In the South Atlantic this species breeds at Tristan da Cunha and Gough Island and is not uncommon at sea north of 50°S.

SOUTHERN GIANT PETREL *Macronectes giganteus* (A)

Common, widespread breeder; some evidence of recent population decrease.

NORTHERN GIANT PETREL *Macronectes halli* (A)

Common, somewhat local breeder.

ANTARCTIC FULMAR *Fulmarus glacialoides* (A)

Regular visitor (Prince & Croxall 1983), mainly between October and December but seen from land or over the shelf in all months between

May and December. This species is a common breeder in the southern Scotia Sea, with its nearest breeding colonies at the northern South Sandwich Islands, some 650 km southwest of South Georgia. Part of the population migrates north in April–May to the South American coast.

ANTARCTIC PETREL *Thalassoica antarctica* (A)

Regular visitor. Recorded in most winters between June and August. The most unusual record is of two seen in front of the Hamburg Glacier on 26 December 1983 (L. Clifton in Bourne & Curtis 1985). The number appearing at South Georgia each winter appears to be influenced by the extent of pack ice in the Scotia Sea. From Bird Island it is usually seen in most winters in Stewart Straits but numbers rarely exceed ten observations per winter. The winter of 1987 was exceptionally cold and prolonged and the pack ice extended to South Georgia and was visible from Bird Island; between 30 July and 16 October, 48 Antarctic Petrels were observed from Bird Island by BAS biologists.

CAPE PETREL *Daption capense* (A)

Very common, fairly widespread breeder. Population increased in the 1970s and may still be expanding.

SNOW PETREL *Pagodroma nivea* (A)

Common, widespread breeder, mainly in mountains and at altitudes greater than 300 m (Croxall *et al.* in press).

KERGUELEN PETREL *Pterodroma brevirostris* (A)

Regular visitor to shelf waters (Prince & Croxall 1983), mainly between February and June. It was common (200 per day) over deep water off eastern South Georgia in June 1991 (RRV). This species is now generally accepted to be wide ranging in the Southern Ocean as far south as the pack ice and north to about 30°S (Lambert 1984). In the South Atlantic it breeds at Tristan da Cunha and Gough Island. Although several South Georgia records are of birds seen or caught close inshore, including one with the dawn dispersal of birds from the Willis Islands on 3 November 1983 (WRPB *in litt.*), extensive searches, especially in recent years, have provided no evidence that it breeds at South Georgia.

ATLANTIC PETREL *Pterodroma incerta* (A)

Vagrant. There are nine records involving 13 birds of which three records refer to six birds seen over the shelf. The first record we can trace was at 53°S, 43°W on 26 October 1976 (JPC); the nearest to mainland South Georgia were three birds at 53°44′S, 36°58′W on 10 April 1977 (BP) and a single bird at 53°16′S, 41°08′W on 19 March 1978 (PAP).

This species is rare at South Georgia, though apparently regular north of the Shag Rocks area (PH *in litt.*), but is frequently seen north of 50°S. In the South Atlantic it breeds at Tristan da Cunha and Gough Islands.

WHITE-HEADED PETREL *Pterodroma lessonii* (A)

Vagrant. There are four records: the first was of one seen at 53°13′S, 35°36′W on 14 April 1980 (MJW, AC); the second of a bird captured onboard the *World Discoverer* while at anchor in Elsehul harbour on the night of 23 December 1983 (SP); the third was seen at 53°35′S, 39°50′W on 14 March 1984 (JJA) and the fourth at 54°18′S, 35°32′W on 20 February 1994 (RRV). There is also a record of one seen half-way between the South Orkney Islands and South Georgia in February 1976 (Kock & Reinsch 1978).

This species breeds on Kerguelen, Macquarie, Auckland and the Antipodes islands; in the South Atlantic it is typically seen in small numbers between 40° and 50°S.

GREAT-WINGED PETREL *Pterodroma macroptera* (A)

Vagrant. There are three records. The first was on the shelf at 53°44′S, 36°18′W on 10 April 1977 (BP); the second, also over the shelf, at 53°10′S, 43°50′W on 22 February 1980 (MJW); the third at 51°21′S, 37°11′W on 22 March 1985 (MJW). There are two tentative records, just outside the SGMZ, in February and mid-March 1989 (Cheshire 1990).

In the South Atlantic the species breeds at Tristan da Cunha and Gough Island.

SOFT-PLUMAGED PETREL *Pterodroma mollis* (A)

Regular visitor. This species is often recorded at South Georgia. In the BAS database there are 391 records within the SGMZ involving 848 birds, of which 292 were seen over the shelf. There was a noticeable influx, associated with southerly movement of warm water masses, in early 1986 (Hunt *et al.* 1992). In the South Atlantic this species, which breeds at Tristan da Cunha and Gough Island, is widespread and abundant, particularly in the Drake Passage in the austral autumn.

ANTARCTIC PRION *Pachyptila desolata* (A)

Very abundant, widespread breeding species.

FAIRY PRION *Pachyptila turtur* (A)

Common, but very local, breeder (Prince & Copestake 1990). Seen more commonly at sea in winter than summer (RRV *in litt.*).

BROAD-BILLED PRION *Pachyptila vittata* (A)

Vagrant. One previous record of a bird seen near the entrance of Cumberland Bay, on 24 November 1982 (Prince & Croxall 1983). On 14 March 1986 two birds were captured at night in Stromness Bay, having been attracted by ships' lights (Bourne & Curtis 1986), and one bird came on board RRS *James Clark Ross* on 10 January 1994 at 53°42′S, 38°20′S and was measured and photographed (RRV).

This species is rare at South Georgia but may well occur more frequently at the northern edge of the SGMZ than the records so far suggest. In the South Atlantic the species breeds at Tristan da Cunha and Gough Island.

THIN-BILLED PRION *Pachyptila belcheri* (A)

Regular visitor. This species is probably under-recorded owing to the similarity in plumage with Antarctic Prion. In addition to the five previous land- and ship-based records (Prince & Payne 1979, Prince & Croxall 1983), there are a further 16 birds recorded from an RFA vessel on various dates between 13 March and 2 May 1986 in the Cumberland Bay area (Bourne & Curtis 1986). At sea the BAS database holds 347 observations of 1892 birds within the SGMZ, of which 178 observations of 1465 birds refer to birds seen over the shelf. Most of these records are to the west of South Georgia in the direction of the Falkland Islands where the species is an abundant breeder.

BLUE PETREL *Halobaena caerulea* (A)

Very common, fairly widespread breeder. Some populations (e.g. at Bird Island) have decreased recently due to destruction of part of their tussock grassland breeding habitat by Antarctic Fur Seals *Arctocephalus gazella*.

WHITE-CHINNED PETREL *Procellaria aequinoctialis* (A)

Very abundant, widespread breeder.

GREY PETREL *Procellaria cinerea* (A)

Occasional visitor. Recorded in the SGMZ at least as early as February 1963 (Thurston 1982). First recorded over the shelf at 53°44′S, 36°58′W on 10 April 1977 (BP). In the BAS database there are 80 observations of 160 birds within the SGMZ, of which 59 have been seen over the shelf. The most inshore were those reported by Bourne & Curtis (1986) between Leith and Grytviken.

In the South Atlantic this species breeds at Tristan da Cunha and Gough Island.

GREAT SHEARWATER *Puffinus gravis* (A)

Regular visitor to shelf waters (Prince & Croxall 1983), mainly between November and April. This species is most frequently seen to the west of mainland South Georgia in the vicinity of Shag Rocks. A massive influx occurred in early 1986, associated with southerly movement of warm water masses towards South Georgia (Hunt *et al.* 1992).

Breeds in large numbers at Tristan da Cunha and Gough Island. Small numbers breed in the Falkland Islands (Woods 1988).

SOOTY SHEARWATER *Puffinus griseus* (A)

Occasional visitor. There are 48 observations involving 87 birds within the SGMZ; 19 of these observations refer to 39 birds seen over the shelf. The first record over the shelf was at 53°S, 42°W on 26

October 1976 (GT). Since then the species has been seen close to Bird Island and Leith but is mainly seen to the west of South Georgia near Shag Rocks.

In the South Atlantic this species breeds on the Falkland Islands and southern South America. It is frequently seen in the Drake Passage and has been recorded as far south as 58°S in the South Atlantic (Kock & Reinsch 1978, Thurston 1982).

LITTLE SHEARWATER *Puffinus assimilis* (A)

Vagrant. There are only two records definitely within the SGMZ, both over the shelf. The first was at 53°49′S, 40°02′W on 20 March 1985 (MJW), the second at 53°38′S, 39°40′W on 11 February 1986 (RRV, MJW). The species is more frequently seen to the northwest of South Georgia just north of the Antarctic Polar Front and also regularly (up to 8 birds per day) recorded north of Shag Rocks (PH *in litt.*).

In the South Atlantic this species breeds at Tristan da Cunha and Gough Island.

WILSON'S STORM-PETREL *Oceanites oceanicus* (A)

Abundant, widespread breeder.

BLACK-BELLIED STORM-PETREL *Fregetta tropica* (A)

Common, but rather local, breeder, whose population may have been underestimated in the past.

WHITE-BELLIED STORM-PETREL *Fregetta grallaria* (B)

Vagrant. Eakin *et al.* (1986) recorded a probable, but unconfirmed, individual with a group of Black-bellied Storm-petrels at 52°21′S, 40°06′W on 10 May 1975. We know of no other sightings of the species within the SGMZ, the nearest convincing records being at 50°40′S, 50°01′W (Kock & Reinsch 1978).

GREY-BACKED STORM-PETREL *Garrodia nereis* (A)

Rare breeder. Although there are no confirmed breeding records since 1972 (Prince & Payne 1979), birds have been seen making display flights over suitable habitat on several occasions.

SOUTH GEORGIA DIVING-PETREL *Pelecanoides georgicus* (A)

Very abundant breeder.

COMMON (SUBANTARCTIC) DIVING-PETREL *Pelecanoides (urinatrix) exsul* (A)

Very abundant breeder.

SOUTH GEORGIA (BLUE-EYED, IMPERIAL) SHAG *Phalacrocorax georgianus* (A)

Common, widespread breeder. We follow Siegel-Causey (1988) and Siegel-Causey & Lefevre (1989) in the recognition of species limits in this group of taxa, formerly treated as subspecies of *P. atriceps*. However, given that taxa are distinguished currently solely on osteological and/or morphometric characters there is a particular need for fieldwork to confirm the existence and elucidate the nature of species-isolating mechanisms. The distribution of *P. georgianus* is also uncertain. Marchant & Higgins (1990) indicate that it occurs at the South Orkney Islands (with Antarctic Shag *P. bransfieldensis* occurring east to the South Shetland Islands), but the basis for this is not stated. As the identity of the shags at the South Sandwich Islands is unknown, it may be best at present to regard *P. georgianus* as confined to South Georgia. A critical study of the relationships between (and status of) *P. bransfieldensis* and *P. georgianus* on the islands of the Scotia Arc as well as between *P. bransfieldensis* and *P. atriceps* in southern South America (Clark *et al.* 1992) is needed.

GREAT EGRET *Casmerodius albus* (A)

Vagrant. Four previous records (Prince & Payne 1979, Prince & Croxall 1983). A fifth record, of a bird with a flock of nine Cattle Egrets *Bubulcus ibis*, was at Bird Island on 19 April 1986 (CD). This cosmopolitan species is widespread in South America, breeding south to 47°S in Argentina. It is an irregular visitor to the Falkland Islands, with at least nine records (Woods 1988).

SNOWY EGRET *Egretta thula* (A)

Vagrant. Two previous records (Prince & Croxall 1983). One additional record of a single bird seen on 4 April 1980 at Bird Island (JPC). Widespread breeding species in South America, south to about 40°S; four records of vagrants to the Falkland Islands (Woods 1988, Gregory 1994).

CATTLE EGRET *Bubulcus ibis* (A)

Regular visitor. Since the first record for South Georgia in 1977 (Prince & Croxall 1983), a total of 191 birds has been recorded at South Georgia. Figure 3 shows the distribution of records: 1979, 1985 and 1986 were years of major invasions; 1978, 1980, 1988 and 1989 were the only years in which it has not been recorded. These data do not include 26 birds which came abroad RV *Nathaniel Palmer* half way between the Falkland Islands and South Georgia and disembarked at Stromness in May 1993 (RRV *in litt.*). In all years occurrences have been between March and June.

This species is widespread throughout the American continent. It was first recorded in the Falkland Islands in 1976 (Strange 1979), since when it has occurred annually, often in large numbers, exceeding 3000 birds in April 1986 (Woods 1988). It has occurred, with increasing frequency, at other subantarctic islands (e.g. Prince Edward and Crozet Islands (Newton *et al.* 1983, Stahl *et al.* 1984) and at the South Orkney (Rootes 1988) and South Shetland (Kaiser & Peter 1988, Torres *et al.* 1986, Trivelpiece *et al.* 1987) Islands since the first records in 1981 and 1984 respectively. There is an unpublished record from 61°30′S, 27°52′W, 100 nautical miles south of the southernmost island of the South Sandwich Islands, on 13 April 1982 (HO'G). The most

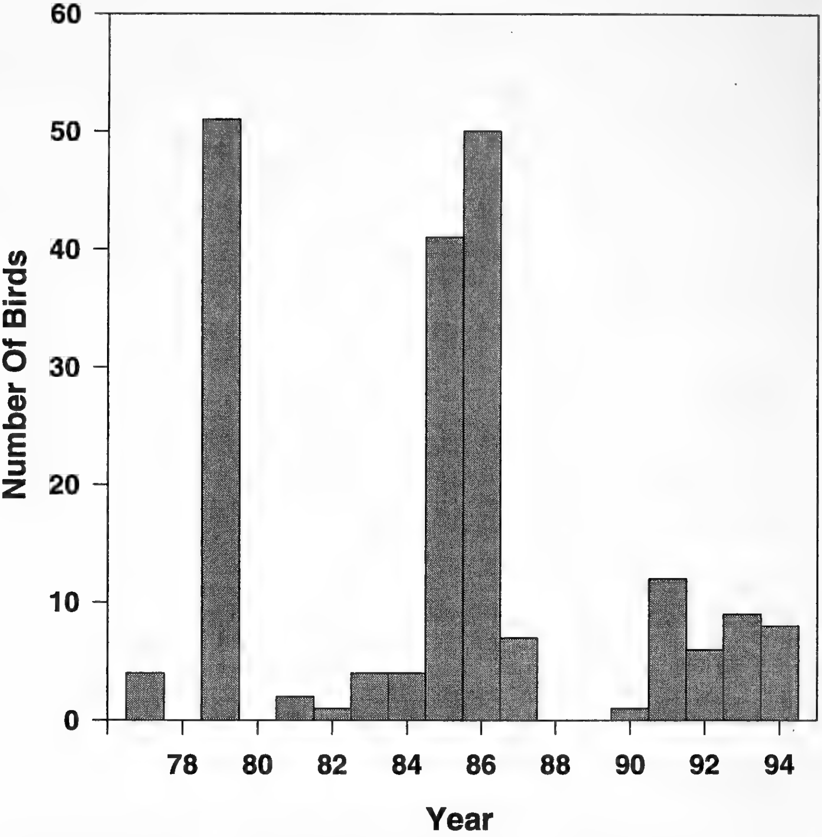

Figure 3. Numbers of Cattle Egrets recorded at Bird Island between 1977 (i.e. austral summer of 1977/78) and 1994 (i.e. 1994/95).

southerly record known to us is from Argentine Islands (65°15′S, 64°16′W) in December 1979 (AS).

UPLAND GOOSE *Chloephaga picta* (D)

Introduced to South Georgia from the Falkland Islands in 1911 and extirpated by 1950. A subsequent introduction in 1958 did not succeed (Prince & Payne 1979).

SOUTH GEORGIA (YELLOW-BILLED) PINTAIL *Anas georgica georgica* (A)

Common widespread breeder. This subspecies is endemic to South Georgia.

There are two records of the South American subspecies *A. g. spinicauda* which breeds in the Falklands (locally) and throughout Argentina, Chile and north to Bolivia and southeastern Brazil. The first record was on 15 December 1979 at Bird Island (IH, JPC), the second of one seen and photographed in company with *A. g. georgica* at Grytviken on 10 December 1994 (KR).

There are at least eight records of *A. georgica* on the Antarctic Peninsula, South Shetland and South Orkney Islands (Cordier *et al.* 1983, Rootes 1988).

YELLOW-BILLED (SPECKLED) TEAL *Anas flavirostris* (A)

Rare, with a small breeding population in the Cumberland Bay area. In addition there are six reports from Bird Island involving a minimum of 12 birds. In 1979 two were present on 11 February; by 7 March this had increased to six and three were last seen on 26 March (IH, BB, GT). Subsequent records are: one from 28 February to 5 March 1984 (TSMcC, PAP); one on 31 May 1985 (RLS); two on 23–24 March 1986 (RLS); one from 2 May to 14 August 1988 (SR, MRRJ); one on 5 July 1989 (MRRJ). It is not known whether these birds are from the Cumberland Bay population or represent immigration from the Falkland Islands, where the species is common and widespread.

CHILOE WIGEON *Anas sibilatrix* (A)

Vagrant. Five previous records (Prince & Payne 1979, Prince & Croxall 1983). One additional record of a male, seen and photographed at Bird Island on 7 March 1985 (RLS, CD).

This species is widespread in South America and a local breeder in the Falkland Islands. There are records of at least 13 birds in the South Shetland and South Orkney Islands (Beck 1968, Maxson & Bernstein 1980, Rootes 1988, Trivelpiece *et al.* 1987).

BLUE-WINGED TEAL *Anas discors* (A)

Vagrant. Only one record, of a drake collected on 20 June 1972 in Cumberland Bay (Prince & Payne 1979). This species breeds in North America, wintering in central America and northern South America, occasionally south to about 30°S in Argentina. There are apparently no records for the Falkland Islands (Woods 1988).

TURKEY VULTURE *Cathartes aura* (A)

Vagrant. The first record for South Georgia was one soaring over Grytviken whaling station on 14 September 1991 (KR). On 24 September 1992, a bird was again seen (and photographed) at Husvik (OO). Further sightings at Husvik followed on 9 October 1992 and towards the end of that month (OO). At Bird Island, sightings of single birds were made on 6 October (IMcC) and 6 December 1992 (MR, BCO). During this period a BBC film crew reported seeing this species at the Bay of Isles and St Andrews Bay. From the photograph the bird seen at Husvik was an adult (with a bright red head). There were no further sightings after 6 December during the austral summer of 1992/93 and none during the summer of 1993/94. In the summer of 1994/95 an adult was seen at Bird Island throughout 22 November 1994 (KR). Thus Turkey Vultures have been seen in three out of the last four years and always between September and December. Even if the various sightings in 1992 refer to the same bird, there are three confirmed records. It is unlikely that as large and mobile a species as the Turkey Vulture could go undetected for the lengthy intervals between the observations in different years, suggesting that three separate events were involved.

This is the first record of a South American vulture in Antarctica. In order to reach South Georgia from its nearest breeding locality in the Falkland Islands it would have had to cross 1000 km of ocean. Unlike many vagrants that probably perish eventually, this species could probably survive on the abundant food supply available year-round on South Georgia. Even in the winter, dead chicks from the large King Penguin colonies and Reindeer *Rangifer tarandus* carcasses would provide an adequate food supply until Southern Elephant Seals *Mirounga leonina* start breeding in September.

In the Falkland Islands it is a common resident (Woods 1988), frequently associated with seabird and seal colonies. With reduced persecution, its numbers have increased in recent years, which may have encouraged range expansion.

PEREGRINE FALCON *Falco peregrinus* (A)

Vagrant. The first record for South Georgia was of one which came on board ship at 52°33′S, 46°W, 120 nautical miles west of Shag Rocks, on 29 April 1986 and flew ashore the next day at South Georgia (Bourne & Curtis 1986). The second record was at Bird Island on 7 August 1991 when one was seen chasing a Kelp Gull *Larus dominicanus* (JMC, GL, JA).

In the Falkland Islands this species frequently preys upon prions and small petrels. It has been recorded 60 km offshore, using ships as feeding stations (Woods 1988). Given the increased movement of shipping between the Falklands and South Georgia and the migratory behaviour of this species, more sightings may occur in the future.

PURPLE GALLINULE *Porphyrula martinica* (A)

Vagrant. One previous record, of an immature male that flew into a window at Grytviken, Cumberland Bay, in 1943 (Pereyra 1994, Prince & Payne 1979). The second record is of a bird that was killed after flying on board the RV *Walter Herwig* at 53°30′S, 38°00′W, about 55 km north of Bird Island, on 4 April 1978 (KHK). The specimen is now in the Hamburg Museum.

This species has a wide distribution from the southeastern United States southwards to southern Chile and 35°S in Argentina (Meyer de Schauensee 1971). It has been recorded three times in the Falkland Islands (Woods 1988) and also at Tristan da Cunha (frequent), Ascension and St Helena (Urban *et al.* 1986).

ALLEN'S GALLINULE *Porphyrula alleni* (A)

Vagrant. The only record for South Georgia is of a fairly long-dead corpse, found at Royal Bay in December 1984 (BB) and deposited in the British Museum. Although its plumage characteristics are inadequate for certain identification, the wing measurement (159 mm) is diagnostic of this species (range 141–164 mm; Blake 1977), being outside the range of the larger *P. martinica* (172–191 mm; Urban *et al.* 1986) and the smaller Azure Gallinule *P. flavirostris* (119–139 mm; Blake 1977). The bill length (24.5 mm) is also consistent with *P. alleni* (22–25 mm), rather than *P. martinica* (25–31 mm).

The species is widespread in the African tropics where it is migratory and prone to irruptions. In addition to a number of records in Europe it has strayed to St Helena and Ascension Island (Urban *et al.* 1986).

SOLITARY SANDPIPER *Tringa solitaria* (A)

Vagrant. There are no additions to the two records, both from Bird Island, on 11 November 1975 and 8–9 November 1981 (Prince & Payne 1979, Prince & Croxall 1983). This species breeds in Alaska and Canada, wintering in western Peru, Bolivia and Argentina (Meyer de Schauensee 1971). It has not been recorded in the Falkland Islands.

LITTLE STINT *Calidris minuta* (A)

Vagrant. One record, of a specimen collected at Bird Island on 28 December 1977. Originally described as a probable first year immature (Prince & Croxall 1983), it has subsequently been identified as an adult female (Marchant *et al.* 1986); the specimen is now lodged in the British Museum.

This is still the only confirmed record for South America of a species which is a rare vagrant to North America. It breeds in north-central Siberia and winters mainly in India and Africa.

WHITE-RUMPED SANDPIPER *Calidris fuscicollis* (A)

Regular but rare visitor. Seven previous records (Prince & Payne 1979, Prince & Croxall 1983). Subsequently there are ten reports of eleven individuals. All records in spring are between October and December and from Bird Island: 21 November 1982 (PAP, PGC); 26–31 October 1984 (MO'C); 26–28 October 1985 (MO'C); 8 November 1985 (MO'C, CD), possibly the same bird as in the previous record; 12 November 1988 (SR *et al.*); 15 December 1988 (ILB, SR); 26 December 1989 (PAP, SR, MRRJ); 9 November 1991 (JMC, GML, JA); 16–25 October 1993 (JMC, KR, AGW, NH). The only autumn record is of two birds seen together on 14–15 March 1986 on Tonsberg Point (Bourne & Curtis 1986).

This species is the commonest wader visiting South Georgia. It is also a very common non-breeding visitor to the Falkland Islands (where flocks sometimes number more than a hundred birds) from the arctic coasts of North America where it breeds (Woods 1988). There are at least five separate records for the South Shetland Islands, including a group of 25 from October 1985 to February 1986 (Trivelpiece *et al.* 1987).

PECTORAL SANDPIPER *Calidris melanotos* (A)

Vagrant. Two previous records (Prince & Payne 1979, Prince & Croxall 1983). Four additional records, all from Bird Island. An adult female on 1 January 1982 (PGC), a first-winter female on 12 November

1982 (PAP) and a male on 11 June 1983 (PGC) were all collected. The last record was on 20 October 1988 (SR, TDW, MRRJ).

This species breeds in arctic North America and Siberia. It winters in South America as far south as 50°S in Argentina. There are four records for the Falkland Islands (Woods 1988) and one from the Antarctic, at Rothera Point (67°34′S, 68°08′W) on 5–9 January 1978 (TWS).

BAIRD'S SANDPIPER *Calidris bairdii* (A)

Vagrant. The first confirmed record for South Georgia was of a bird seen and photographed at Bird Island from 26 October to 2 November 1994 (KR). The photograph shows clearly the diagnostic characters, including the long wings projecting beyond the tail, the short legs and the bill, completely black with no yellow at the base. In the field the absence of a white rump and the distinctive call were noted.

This species probably occurs annually in small numbers in the Falkland Islands (Gregory 1994). It breeds in arctic North America and winters in South America as far south as Tierra del Fuego. There is one record for the South Orkney Islands (Rootes 1988).

WILSON'S PHALAROPE *Phalaropus tricolor* (A)

Vagrant. The first record for South Georgia was of a single bird in winter plumage observed and photographed from a distance of 3 m at Bird Island on 13 October 1983 (PGC, BCO, RLS).

The species breeds in North America and migrates to South America wintering in Uruguay, Argentina and central Chile. According to Woods (1988), a few birds reach the Magellanic region and there has been one record for northwest Tierra del Fuego (Humphrey *et al.* 1970). It has been recorded at least twice in the Falkland Islands (Woods 1988), once at Signy Island, South Orkney Islands in March 1982 (Rootes 1988) and once at Alexander Island, Antarctica, in October 1968 (Conroy 1971).

YELLOW-BILLED (GREATER, SNOWY, AMERICAN) SHEATHBILL *Chionis alba* (A)

Common and widespread breeder, invariably in association with seabird and seal colonies.

BROWN (SUBANTARCTIC) SKUA *Catharacta loennbergi* (A)

Common and widespread breeder; population possibly still increasing in some areas (see Prince & Croxall 1983).

SOUTH POLAR (MACCORMICK'S) SKUA *Catharacta maccormicki* (A)

Rare but regular migrant. There are sixteen records of nineteen birds. The first ten records, between 13 December 1979 and 19 January 1988, were all sighted at sea, as was a bird at 53°42′S, 38°20′W on 10 January 1994 (RRV). Eight were over the shelf. There are five land-based records, all at Bird Island: 5 April 1988 a dark phase bird (SR *et al.*); 21 March 1989 one, dark phase (SR); 4 February 1990 two, one of the intermediate phase and the other paler (GML, JMC *et al.*);

4 January 1994 a first-year dark phase bird, caught and ringed (PAP, KR *et al.*); 23 March 1994 another dark phase bird (NH, KR).

At South Georgia this species is probably a regular but scarce passage migrant. It has a circumpolar breeding distribution on the Antarctic continent (including the Antarctic Peninsula north to the South Orkney Islands) and migrates northwards into the Atlantic and Pacific Oceans. It is a rare but probably regular migrant to the Falkland Islands (Woods 1988, Gregory 1994).

LONG-TAILED SKUA *Stercorarius longicaudus* (A)

The first record for South Georgia was of an adult bird in fresh plumage seen and photographed near Grytviken in Cumberland Bay, on 15 January 1984 (Naveen 1989).

This species breeds in arctic regions of the Northern Hemisphere. It winters in the Atlantic and Pacific Oceans south to 55°S and has been recorded occasionally in winter around the Falkland Islands (Curtis 1988) and east to 45°36′S, 53°30′W (MJW), not infrequently in the Falklands Current and at sea between South Georgia and Brazil (Veit 1985).

KELP GULL *Larus dominicanus* (A)

Frequent-to-common and widespread breeder.

DOLPHIN GULL *Larus scoresbii* (A)

There are two records of at least four individuals of this gull at South Georgia. The first was seen flying around RFA *Olna* about 8 km off Cumberland Bay on 11 April 1985 (Bourne & Curtis 1985). The second occurred at Grytviken on 21 February 1986 and three were seen there on 12 March 1986 (Bourne & Curtis 1986). It is not known if the one seen on 21 February was one of the three seen on 12 March but it seems likely.

This species has a restricted breeding distribution in southern South America and the Falkland Islands, where it is resident (Woods 1988).

[**OLROG'S GULL** *Larus atlanticus*

The occurrence of this species at South Georgia was based on one record of an immature collected there in January 1949 (Olrog in Watson 1975, Prince & Payne 1979, Prince & Croxall 1983). However, Escalante (1984) has re-identified the specimen as a Kelp Gull, so the species must be deleted from the South Georgia list.]

BROWN-HOODED GULL *Larus maculipennis* (B)

Vagrant. On 21 May 1987 a small gull at Bird Island was identified as belonging to this species. A full description and assessment was published (Delany *et al.* 1988). In the Falkland Islands this species is a locally common resident breeder (Woods 1988). It is widely distributed in southern South America.

Bourne (1988), however, suggested that the Delany *et al.* (1988) description was unacceptable for Brown-hooded Gull but could apply to a subadult Franklin's Gull *L. pipixcan.* He noted that this is a mobile, migratory marine species and thus more likely to occur at South Georgia than a terrestrial and marshland species like the Brown-hooded Gull. In fact, the latter species feeds predominantly in nearshore marine habitats, such as kelp beds, and its populations in southern South America migrate northwards (as far as Brazil) in winter. Nevertheless, Bourne's (1988) view might be supported by records of Franklin's Gull from the Falkland Islands (one in 1986; Woods 1988) and Signy Island, South Orkney Islands (one adult in breeding plumage, seen and photographed 14–20 April 1990; RC) and in the Drake Passage 160 km from the South Shetland Islands in January 1992 (PH *in litt.*).

ANTARCTIC (SOUTH GEORGIA) TERN *Sterna (vittata) georgiae* (A)

Common and fairly widespread breeder. As Murphy (1936) noted, the small size of South Georgia birds supports their recognition as a distinct subspecies, *S. v. georgiae*. Examination (by PAP) of a much larger series confirms the distinctiveness of the taxon. Any review of the status of terns inhabiting subantarctic islands should include re-evaluation of the taxonomic rank of the South Georgia population. The population may have decreased (or simply relocated) as favoured coastal breeding sites have been taken over by Antarctic Fur Seals.

ARCTIC TERN *Sterna paradisaea* (A)

Rare migrant. Two previous inshore records, in early March 1976 in Cumberland East Bay (Kock & Reinsch 1978) and on 7 April 1977, when three specimens were collected in Stromness Bay from RV *Hero* (Jehl *et al.* 1978). The third inshore occurrence was of a single bird in winter plumage, again in Stromness Bay, on 20 November 1986 (TSMcC *et al.*). There are no confirmed records of this species at sea within the SGMZ, although there are many from south of 60°S and a few between 40 and 45°S.

This species probably occurs at South Georgia more frequently than the few records suggest. It breeds in the arctic and temperate Northern Hemisphere and winters in pack ice areas in Antarctica.

EARED DOVE *Zenaida auriculata* (C)

Vagrant. The only record for South Georgia relates to ship-assisted passage. It was observed on board RFA *Grey Rover* 270 nautical miles east of the Falkland Islands on 1 April 1992 and remained on board until 3 April when the vessel was approximately 10 nautical miles north of the Bay of Isles, South Georgia (Curtis 1994).

The species is very common over much of southern South America and occurs irregularly in the Falkland Islands (Woods 1988, Gregory 1994).

SOUTH GEORGIA PIPIT *Anthus antarcticus* (A)

Common. Endemic widespread breeder confined to areas free of Brown Rats *Rattus norvegicus* on offshore islands and parts of the south coast.

EASTERN KINGBIRD *Tyrannus tyrannus* (A)

Vagrant. The only record is still that of a bird collected at Grytviken, Cumberland Bay, on 11 November 1973 (Prince & Payne 1979). This species is widespread in North America, wintering in South America south to central Argentina (Ridgely & Tudor 1994). There is one record for the Falkland Islands (Woods 1988).

DARK-FACED GROUND-TYRANT *Muscisaxicola macloviana* (A)

Vagrant. The first record for South Georgia was of a single bird seen daily (and photographed) on Bird Island from 23 to 29 September 1994 (KR, JMC).

There are two described subspecies. *M. m. macloviana* is generally regarded as being resident in the Falkland Islands (Woods 1988); *M. m. mentalis* breeds in southern Chile and Argentina and is at least a partial migrant to and from northern Argentina (Ridgely & Tudor 1994). The latter is perhaps the more likely race to occur at South Georgia.

CHILEAN SWALLOW *Tachycineta leucopyga* (B)

Vagrant. Previously reported in error as a European House Martin *Delichon urbica* (Prince & Croxall 1983). Two birds were seen at Schlieper Bay on 4 April 1982 by P. Martin. At the time of the sighting, PAP, who was at Bird Island, provisionally identified the birds as Chilean Swallows. Subsequently in correspondence (7/9/82), P. Martin identified the species as House Martin, principally on the basis of not being able to see the narrow white apical edge to the innermost remiges that is one characteristic of Chilean Swallow. However, the views obtained and the description provided were fairly brief. In view of the fact that the Chilean Swallow is a regular, if scarce, migrant to the Falkland Islands (Gregory 1994), and has been recorded from 67°17′S, 50°30′W, 160 nautical miles southeast of Elephant Island, South Shetland Islands, on 13 February 1985 (MDRK; specimen deposited in Cambridge University Museum), we feel that the original identification was the correct one.

The Chilean Swallow is a regular migrant to the Falkland Islands, where it has bred once; elsewhere it breeds in Chile and Argentina, the southernmost populations being migratory (Woods 1988).

BARN SWALLOW *Hirundo rustica* (A)

Vagrant. There are no further records to add to the five previously published (Payne & Prince 1979, Prince & Croxall 1983). All these records were thought to refer to the race *H. r. erythrogaster* which breeds in North America and winters in the tropical and temperate zones of South America. This species has also been recently found breeding in the Buenos Aires province in Argentina (F. Vuilleumier *in litt.*). It frequently occurs in the Falkland Islands, especially in October and November, the same time as all the records from South Georgia.

LONG-TAILED MEADOWLARK *Sturnella loyca* (A)

Vagrant. The first record for South Georgia was one seen on 9 April 1987 at Prince Olav Harbour by Curtis (1988) who adjudged it unlikely to have received an assisted passage. The species breeds fairly commonly throughout Chile and Argentina (the southern populations being resident) and is a common resident in the Falkland Islands (Woods 1988).

HOUSE SPARROW *Passer domesticus* (C)

Vagrant. One bird arrived in the late 1950s aboard a whaling vessel from South America and died soon afterwards (Watson 1975, Prince & Payne 1979).

The South Georgia list now stands at 79 species (including 1 introduction, 2 ship-assisted species and 3 needing definite confirmation), of which 30 are breeding species. The recent development of records of South Georgia birds is of some interest. By 1970, the list was of 38 species (including 1 introduction and 1 assisted-passage species), 27 recorded as breeding (Watson *et al.* 1971, Watson 1975). In the next seven years (Prince & Payne 1979) the total was raised to 50 species, adding two new breeding species (Rockhopper Penguin, Blue Petrel) and 10 new vagrants (4 seabirds, 2 waterbirds, 2 waders and 2 landbirds). The next five years (Prince & Croxall 1983) saw 11 further species added (total 61 species), one as a breeding species (Fairy Prion), the rest as vagrants (6 seabirds, 2 waterbirds, 1 wader, 1 landbird). In the last 12 years the list has risen to 78 species (including one more assisted-passage species), essentially double the 1970 list. No new breeding species have been recorded but 17 new visitors or vagrants (9 seabirds, 1 waterbird, 2 waders, 5 landbirds) were added. However, several seabird species have only, or only commonly been seen in years when abnormally warm surface water was present near South Georgia, as in 1986 and 1990. Increasing the area of consideration, from the continental shelf to that of the South Georgia Maritime Zone, adds only one seabird species (White-bellied Storm-petrel), bringing the overall total to 79 species. It should be noted, however, that the shelf extends past Shag Rocks nearly to the position of the Antarctic Polar Front, thereby providing favourable circumstances for recording a wide variety of seabird species.

The most likely potentially new seabird species for the South Georgia area must include Manx Shearwater *Puffinus puffinus* (2 and 5 birds in 1991 and 1993 respectively in the area north of Shag Rocks (PH *in litt.*), but without precise location and therefore not definitively within the SGMZ), Arctic Skua *Stercorarius parasiticus* (records from Signy Island, South Orkney Islands (61°S) in 1951 and 1980 (Rootes 1988)) and Pomarine Skua *S. pomarinus* (at least 5 records for the Antarctic Peninsula and South Shetland Islands (Watson 1975, Bannasch 1984)). One possible new waterbird might be Black-necked Swan *Cygnus melanocoryphus* which has reached the South Shetland Islands (at least 10 individuals in January 1989) and 65°S on the Antarctic Peninsula (summer 1916/17, February 1989 and December 1994 to January 1995; Bennett 1922, Lazo & Yanez 1989, Orgeira & Fogliatto 1991, S. Cuthbertson *in litt.*). Additional wader species might include Grey Phalarope *Phalaropus fulicarius* (one on the Antarctic

Peninsula (Watson 1975), two at Signy Island in 1977 and 1982 (Rootes 1988)), Upland Sandpiper *Bartramia longicauda* (one at Deception Island in 1923, a probable at Signy Island in 1962–63 (Watson 1975) and one at 40°35′S, 39°34′S, 1500 km north of South Georgia on 18 October 1980 (PAP, MJW)) and Least Sandpiper *Calidris minutilla* (one at Signy Island in 1981/82; Rootes 1988). New landbirds are particularly hard to predict. Possible species might be White-crested Elaenia *Elaenia albiceps* (two records from the Falkland Islands (Woods 1988) and one from midway between Tierra del Fuego and the South Shetland Islands at 57°05′S, 59°25′E (Nores & Yzurieta 1981)), Magellanic Snipe *Gallinago paraguaiae* (one at Signy Island on 19 and 20 March 1988 (JA, JP)), Rufous-chested Dotterel *Charadrius modestus* and Correndera Pipit *Anthus correndera*, both seen at sea to the east of the Falkland Islands in spring (WRPB *in litt.*).

The total number of breeding birds species at South Georgia is fairly typical of that for similar sub-antarctic islands, being slightly fewer than at Kerguelen and Crozet Islands (Jouventin *et al.* 1984, Weimerskirch *et al.* 1988) and slightly more than at Marion, Prince Edward (Burger *et al.* 1980) and Macquarie (Rounsevell & Brothers 1984) Islands. However, South Georgia has more vagrants recorded than any other sub-antarctic island, probably reflecting its proximity to species-rich South American source areas and its location in the path of the prevailing westerly winds. In contrast, the other sub-antarctic islands are mainly to the south of continental landmasses and not similarly in the path of prevailing winds.

Acknowledgements

For providing details of previously unpublished records we thank J.-J. Argoud, J. Arnould, J. Ashford, R. Bevan, J. H. R. Boswall, I. L. Boyd, B. Brown, A. Clarke, N. J. Cobley, R. Coggan, P. G. Copestake, J. M. Cooper, C. Duck, N. Forsyth, M. P. Harris, P. Harrison, N. Huin, I. Hunter, M. R. R. Jones, M. D. R. Kelly, K.-H. Kock, R. Lidstone-Scott, G. Liddle, H. McAlister, T. S. McCann, I. McCarthy, M. O'Connell, H. O'Gorman, O. Olsson, B. C. Osborne, B. Pearson, J. Picken, S. da Prato, M. Richards, S. Rodwell, T. W. Salmon, A. Saunders, G. Thomas, S. Wanless, T. D. Williams, A. G. Wood. For making available extensive data on seabirds at sea we thank especially W. R. P. Bourne, W. F. Curtis, N. M. Harrison, R. R. Veit, M. J. Whitehouse, the many members of BAS who completed record cards since 1971 and A. G. Wood for maintaining the database. Mary LeCroy provided invaluable assistance in examining specimens at the American Museum of Natural History.

For comments on the manuscript, which was typed by Wendy Ramsell and Julie Leland, we thank Bill Bourne, Andrew Clarke, Peter Harrison, Keith Reid, David Snow, Dick Veit, François Vuilleumier and Mick Whitehouse.

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Further on subspeciation in the Red-billed Francolin *Pternistis adspersus* (Waterhouse), 1838

by P. A. Clancey

Received 21 June 1995

The Red-billed Francolin is an endemic species of the northern aspects of the South West Arid Zone of the Afrotropics, which ranges from central and northern Namibia (south as far as *c.* 27°S) and southwestern Angola, east to the mid-Zambezi R. drainage in southwestern Zambia and northwestern Zimbabwe, being replaced to its immediate east by a closely allied congener in the form of the Natal Francolin, and to the south of its range in the west by the larger Cape Francolin. In their recent major revisionary study of the francolins, Crowe *et al.* (1992) group these three so-called partridge-francolins, following the generic recommendations of both Hall (1963) and Wolters (1976), along with a fourth species (Hildebrandt's Francolin), in the new subgenus *Notocolinus* in the resurrected genus *Pternistis* Wagler, 1832, the types of both being the Cape Francolin *Tetrao capensis* Gmelin, 1789. Crowe (1993) validated the introduction of the name *Notocolinus*, thereby becoming its sole author, as well as of three other subgenera of francolins proposed at the same time. It is worthwhile noting that as far back as 1934 *Peters*, in his *Check-List*, recognised the desirability of separating *Pternistis* from *Francolinus* Stephens, 1819, but inadvertently left its type-species four-square in the latter genus. *Francolinus* has as its genotype *Tetrao francolinus*=*Francolinus francolinus* (Linnaeus), a polytypic species of the southwestern Palaearctic and the Indian Sub-Region.

The Red-billed Francolin *Pternistis adspersus* was made known to science on the basis of material collected during General Sir J. E. Alexander's 1830s expedition into the interior of what is now the territory of Namibia, and was described in the ensuing report on the findings of the expedition prepared by G. R. Waterhouse (1810–1888) of the British Museum. Macdonald (1951) studied the type-specimens of birds collected during the course of Alexander's journey into the Namibian hinterland, designating the upper Kuiseb R. area of the inner edge of the Namib Desert as the restricted type-locality of *P. adspersus*.

This francolin was first shown to exhibit a measure of geographical variation by the American specialist R. Meyer de Schauensee (1931), when he proposed the Lake Ngami, northwestern Botswana, population as a new subspecies (*P. a. kalahari*) on both colour and mensural characters. Most later workers have expressed doubt in the validity of *kalahari* and treat *adspersus* as monotypic. However, in a recent revision of the case on the basis of the bulk of material in southern African collections, Clancey (1992) confirmed the polytypy of the species, seeing it as comprising two subspecific groups of populations, employing for them the two names available, *adspersus* (1838) and *kalahari* (1931).

As one frequently finds, the nomenclatural legacy of the past is often a major obstacle to the effective taxonomic treatment in modern terms of the variation of polytypic species. This problem forcibly presents itself here, in that both available names are based on desertic populations and are effectively synonymous. Research for my 1992 paper established that elements of nominate *adspersus* extended south along the inner edge of the Namib Desert certainly as far as the Tropic, lying contiguously to the immediate west of a mesic darker and larger population centred on the Waterberg, a major biogeographical feature present on the northern plateau in the Namibian highlands at 20°28′S, 17°13′E. The Waterberg population is in effect an isolate. The precise southern limit of Namib edge birds is uncertain through a lack of comparative material, though the species is recorded as far as 27°S near Seeheim on the Great Fish R. In the north of Namibia the species extends numerously through Ovamboland (Owambo) (Brown 1993) and the Etosha Pan region to the mid-Okavango R. drainage, Ngamiland and the arid part of northeastern Botswana to north of the Makgadikgadi Salt Pan, where it meets darker elements of the species (herein treated as part of *P. a. mesicus*, following Clancey 1992), and *P. natalensis*.

In the topotypical specimens of nominate *adspersus* examined, from the Windhoek district and localities to the west, as well as from Omaruru and Okahandja to the immediate north, the wings in adult males measured 180–188, abruptly shorter than in the darker

Waterberg population with wings in adult males 191–201, in sub-adults 178–188 mm (see Table 1 in Clancey 1992). Of significance is that the size difference in the Waterberg birds is more strongly marked in sub-adult than in adult birds, the co-efficient of difference being, respectively 1.42 ($n=9$) for sub-adult males and 1.27 ($n=11$) for adults.

Topotypical elements of *adspersus* agree taxonomically in both size and colouration with comparable material of *kalahari* from Maun and the Thamalakane R. in the Okavango region of northern Botswana. This has the result that *P. a. adspersus* (with *kalahari* as a synonym) is applicable to the desertic aggregate of populations, and there is a need to introduce a new name for both western and eastern mesic representatives of the species.

Pternistis adspersus mesicus subsp. nov.

Type. ♂ adult. Waterberg, Otjiwarongo district, Namibia, at 20°28′S, 17°13′E, 11 May 1968. Collected by P. J. Buys. In the ornithological collection of the State Museum of Namibia, Windhoek, Reg. No. 194.005.

Description. Compared with nominate *P. adspersus* as herein interpreted, slightly darker sepia over the upper-parts and wings with narrower white streaking over the hind-neck and upper mantle, and with more extensive black over the lores and distal orbital surfaces. Face and venter with entire forethroat and breast duskier as a result of the more compact reticulation of the darker greyish-brown scaling and duller, less whitish, ground colour. In neatly prepared specimens, the downy belly feathering is appreciably darker and greyer, less buffy white, than in arid country birds. Size in topotypical examples from the Waterberg larger, with wings of ♂♂ 191–201 (195.0) mm, s.d. 4.26, $n=11$; adult ♀♀ 170–177.5 (173.3) mm, s.d. 1.91, $n=9$. In the mid-Zambezi R. drainage population agreeing with the Waterberg one in colour adult males have wings 182–190 (186.1), s.d. 3.02, $n=7$; adult females 174–180 (175.5), $n=4$. Note: Zambezi specimens agree in size with nominate *adspersus* and not with their Namibian affiliate, dry country *adspersus* having wings of adult ♂♂ 178–190 (183.2), s.d. 5.41, $n=8$; adult ♀♀ 170–177 (173.5), s.d. 2.25, $n=6$.

Measurements of the type. Wing 193, culmen from cere 22.5, tarsus 50, tail 90.5 mm. In moderately fresh dress.

Material examined. North-central highlands of Namibia, including the Waterberg, 20; mid-Zambezi R. (Kazungula, at 17°50′S, 25°16′E) 11. *P. a. adspersus*, 50.

Range. Distributed in two widely separated populations from the Waterberg and immediately adjacent parts of the north-central highlands of Namibia, with a taxonomically related population in the mid-Zambezi catchment in northwestern Zimbabwe to the immediate west of the Victoria Falls, the eastern Caprivi Strip on the Chobe R., and southwestern Zambia in association with flood-plains north on the Zambezi R. to Kalabo at 15°S, with rainfall *c.* 600 mm p.a. In northwestern Zimbabwe present sympatrically with the Natal Francolin *P. n. thamnobium* to 20°S and 27°E.

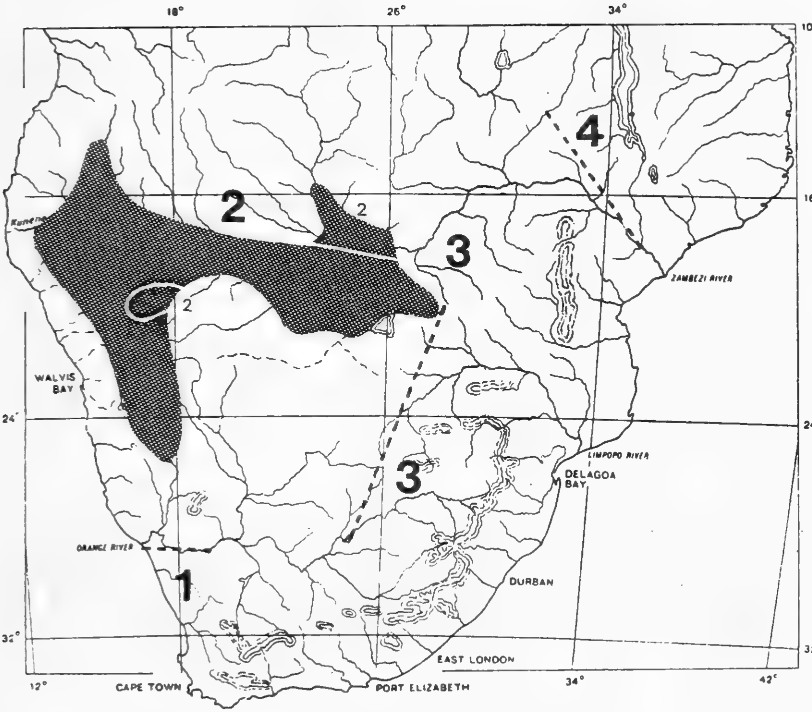

Figure 1. The "Partridge-Francolin" complex (Genus *Pternistis:* Sub-genus *Notocolinus)* of the Southern African Sub-Region, featuring the Red-billed Francolin *P. adspersus*. 1. *Pternistis capensis*; 2. *Pternistis adspersus adspersus* (shaded, unnumbered); *Pternistis adspersus mesicus* (shaded, segments numbered small 2); 3. *Pternistis natalensis* subspp.; 4. *Pternistis hildebrandti* subspp.

Etymology. *Mesicus* from Greek and modern ecology, affecting habitats enjoying a moderate level of precipitation.

Remarks. Re-examination of the variation occurring in the francolin *Pternistis adspersus* confirms that the available names were both initially given to desertic populations and are effectively synonymous, necessitating the need for a name for the birds affecting moister environments. Variation in colour correlates with occurrence in either arid or more mesic country, and size increase in the west with presence in moist highlands, resulting in *P. a. mesicus* being polytopic.

As an outcome of the present study, the range of nominate *P. adspersus*, with *kalahari* as a synonym, will be from southwestern Angola in Mossamedes and Cunene, and the Kaokoveld of northwestern Namibia, south along the eastern verge of the Namib Desert to *c.* 27°S on the Great Fish R., east through Owambo (Ovamboland) and the Etosha Pan region in arid country to western Caprivi, Ngamiland, and Botswana north of the Botletle R. and

Makgadikgadi Salt Pan, where in contact with the eastern population of *P. a. mesicus* and elements of *P. natalensis* (Fig. 1).

As evidenced in the above sections of the paper, the description of *P. a. mesicus* adds yet a further case of the development of an isolate population in association with the Namibian Waterberg, others being the hornbill *Tockus bradfieldi*, the small francolin *Francolinus (Peliperdix) coqui hoechianus*, and passerines including *Cercomela familiaris hellmayri*, *Bradornis pallidus aquaemontis*, *Parus niger xanthostomus*, and, very recently, *Parus rufiventris diligens*. Future work on the avifauna of the Waterberg will undoubtedly reveal yet further cases. The northern parts of Namibia have seemingly become increasingly arid in relatively recent times, resulting in the decline and retreat of mesic elements and the formation of remnant isolates. The Waterberg, being a reasonably moist and well vegetated inselberg on the continental plateau, is advantageously positioned as a refugium for bird species faced by the wide onset of deleterious climatic and concomitant habitat change.

Acknowledgements

For the loan of material and provision of facilities, I am indebted to the Directors and staff of the Transvaal Museum, Pretoria, the East London Museum, the National Natural History Museum of Zimbabwe, Bulawayo, and the State Museum of Namibia, Windhoek. Dr C. J. Brown of the Directorate of Environmental Affairs, Windhoek, kindly assisted with data on the Waterberg region of Namibia. Dr Kit Hustler also kindly assisted by measuring a range of Zambezi valley birds from both Zimbabwe and Zambia in the Bulawayo collection.

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New data support the specific status of Reiser's Tyrannulet, a central Brazilian endemic

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Received 17 June 1995

Reiser's Tyrannulet *Phyllomyias reiseri* was described as a distinct species by Hellmayr (1905), based on a single male specimen collected at Grotão do Santo Antônio, near Santa Filomena (9°07′S, 45°56′W), southern Piauí. Later, Hellmayr (1927) regarded Reiser's Tyrannulet, and Urich's Tyrannulet *P. urichi* from northern Venezuela, as subspecies of the Greenish Tyrannulet *P. virescens*, from eastern Brazil, northeastern Argentina and Paraguay. Zimmer (1955) proposed that Reiser's Tyrannulet should be considered as a distinct species and reported new specimens from Zanja Morotí (*c.* 23°00′S, 56°30′W), Paraguay. Traylor (1979, 1982) treated Reiser's and Urich's Tyrannulets once more as subspecies of the Greenish Tyrannulet. Stotz (1990) re-analysed, with more specimens than any other author, the relationship between Reiser's and Greenish Tyrannulets and concluded that the former taxon should be considered as a distinct species. Stotz (1990) also suggested that Urich's Tyrannulet may be more closely related to Reiser's Tyrannulet than to the Greenish Tyrannulet. Teixeira *et al.* (1991) examined some of the specimens used by Stotz (1990) and suggested that Traylor's previous arrangement of these three taxa was perhaps correct. Here, I re-evaluate the taxonomic status of Reiser's Tyrannulet, based on the analysis of almost all specimens used by previous authors plus new specimens and ecological information on this taxon collected recently in central Brazil.

Methods

I examined 19 specimens of Reiser's Tyrannulet and 62 of Greenish Tyrannulet housed at the Museu Paraense Emílio Goeldi, Belém (MPEG); the Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo; the American Museum of Natural History (AMNH), New York; the Naturhistorisches Museum (NM), Vienna; and Zoological Museum, University of Copenhagen (ZMUC). Differences in tail and wing measurements within and between taxa were compared by using the Mann-Whitney U test with tied ranks (Zar 1984: 141). Data on the natural history of Reiser's Tyrannulet were collected at several sites (see below) in central Brazil from 1987 to 1994.

Results

The following plumage characters, which were pointed out by Stotz (1990) as important in distinguishing Reiser's Tyrannulets from

TABLE 1.
Measurements (mm) of Reiser's Tyrannulet *Phyllomyias reiseri* and Greenish Tyrannulet *P. virescens*

		Wing				Tail			
		n	range	mean	s.d.	*n*	range	mean	s.d.
reiseri	♂	12	54.0–59.5	56.5	1.6	12	48.5–57.5	51.7	2.5
	♀	7	52.0–58.0	56.1	2.3	7	46.5–53.5	50.9	2.4
virescens	♂	31	58.0–65.0	61.8	1.9	29	54.0–64.0	59.7	2.5
	♀	31	55.0–62.0	59.5	2.0	31	51.0–61.5	55.9	2.7

Greenish Tyrannulets, were found in all specimens of *P. reiseri*: (a) pale yellow underparts with a weak olive wash across the breast; (b) bright, yellow-green upperparts; (c) crown feathers tipped with grey; (d) lores and cheek yellowish-white. Stotz (1990) suggested that the colour of the wing-bars in Reiser's Tyrannulets is less greenish-yellow than in Greenish Tyrannulets. However, wing-bars in most (63%) of the specimens of Reiser's Tyrannulet are as brightly greenish-yellow as in some specimens of Greenish Tyrannulet. Stotz also suggested that the ear coverts in Reiser's Tyrannulets are yellow, little, if at all, tipped with olive, while in Greenish Tyrannulets they are tipped extensively with dusky or olive. In fact, most (84%) of the specimens of Reiser's Tyrannulet agree with this description, but three specimens from different parts of the range of this taxon have ear coverts tipped as extensively with olive as some specimens of Greenish Tyrannulet.

Males and females of the Greenish Tyrannulet differ significantly in wing (Mann-Whitney test, $U=752.5$, $P<0.001$) and tail measurements ($U=756.0$, $P<0.001$) (Table 1). In Reiser's Tyrannulets, males and females do not differ either in wing ($U=42.5$, $P=0.96$) or in tail ($U=46.0$, $P=0.73$) measurements (Table 1). Males of Greenish Tyrannulet have significantly longer wings ($U=366.0$, $P<0.001$) and tails ($U=342.0$, $P<0.001$) than males of Reiser's Tyrannulet (Table 1). Similarly, females of Greenish Tyrannulet have significantly longer wings ($U=195.0$, $P<0.01$) and tail ($U=199.5$, $P<0.01$) than females of Reiser's Tyrannulet (Table 1). Despite these significant differences, the wing and tail measurements of Reiser's and Greenish Tyrannulets overlap. and so are unreliable as a means of distinguishing them (Table 1). Belton (1985) listed three male Greenish Tyrannulets with body masses of 10–12 g. In seven males of Reiser's Tyrannulet that I collected, the body masses were 7.0, 7.0, 7.0, 7.0, 7.5, 8.0 and 8.0 g. Even though these data are few, it seems that body mass could be used to distinguish Reiser's from Greenish Tyrannulets.

Belton (1985) described the soft-part colours of Greenish Tyrannulets as follows: tarsus medium to dark grey; maxilla brown to black; mandible brownish-white to greyish-white with dark tip; iris brown. I recorded the soft-part colours of Reiser's Tyrannulets as follows (number of specimens in parentheses): tarsus dark grey (5) or black (8); maxilla black (10); mandible varying from pinkish (1) to whitish (12) with a black tip; iris dark brown (2) or pale brown (12). Based on these data, it seems that these two taxa do not differ conspicuously in the colour of the soft parts.

Belton (1985) recorded the song of Greenish Tyrannulets as follows: "starts with rapid series of staccato "chk's" then rises in pitch and slows into longer sounds, finally dropping pitch again at end: chk-chk-chk-chk-chk-che-eeeee-eeeee-eeeee-eeeee-chu-choo." Willis & Oniki (1991) recorded the song of Reiser's Tyrannulets as a rough downscale "briu-briu-briu-briu-briu-briu-briu" and added: "We did not register any song like that of *P. virescens* in São Paulo State".

I observed or collected Reiser's Tyrannulets (specimens at MPEG) in the following new localities: **Bahia**—Coribe (13°45′S, 44°28′W), Fazenda Formoso, May 1988 and September 1993; Palmas de Monte Alto, Fazenda Boa Vista (*c.* 14°17′S, 43°20′W), September 1991; **Minas Gerais**—Itacarambi (15°08′S, 44°04′W), Fazenda Olho d'Água, October 1987; Arinos (15°53′S, 46°01′W), Fazenda Tira Teima, November–December 1987; **Goiás**—Iaciara (14°09′S, 46°37′W), Fazenda São Bernardo, July 1988; São Domingos (13°24′S, 46°19′W), Fazenda COSIPA, September 1993; **Mato Grosso do Sul**—Bonito, Fazenda Formoso (21°16′S, 56°40′W); Fazenda Harmonia (21°15′S, 56°42′W); Fazenda Pitangueiras (20°52′S, 56°55′W), April–May 1994. All these sites plus other localities in which Reiser's Tyrannulets were collected are located within or along the borders of the *cerrado* region (Fig. 1). I have found Reiser's Tyrannulets only in the canopy or borders of tropical dry forests (see Ratter *et al.* 1978 for description of this habitat). However, specimens from Brasília (MZUSP 51943-944), Jaraguá (MZUSP 15452), Santana do Paranaíba (MZUSP 12745), São Gabriel de Goiás (MPEG 19344) and Formosa (MPEG 19275) may have been collected in evergreen gallery forests rather than in semi-deciduous to deciduous dry forests. In contrast to Reiser's Tyrannulet, Greenish Tyrannulets occur mainly in the canopy and borders of the evergreen or semi-deciduous forests of the Atlantic Forest (Sick 1985, Stotz 1990, Ridgely & Tudor 1994), and their extensions along the Paraná and Paraguay drainages (e.g. Missiones), and in the eastern part of the *cerrado* region (specimens from Lagoa Santa, 19°38′S, 43°53′W, ZMUC; and Ribeirão Jordão, 18°26′S, 48°06′W, AMNH 499938) (Fig. 1).

Discussion

Reiser's Tyrannulets differ in plumage, voice and habitat requirements from Greenish Tyrannulets. Based on these data, I agree with Hellmayr (1905), Zimmer (1955) and Stotz (1990) that Reiser's Tyrannulet should be regarded as a distinct biological species rather than as a subspecies of Greenish Tyrannulet. The taxonomic status of Urich's Tyrannulet, from northern Venezuela, needs to be evaluated with more data. However, because this taxon has a number of diagnostic characters (see Stotz 1990) and is separated from its closest

Figure 1. Distribution of Reiser's Tyrannulets (filled circles, specimens examined; open circles, records from the literature), Greenish Tyrannulets (filled triangles, specimens examined; open triangles, records from the literature), Urich's Tyrannulet (filled square), and Sclater's Tyrannulet (black patches). Limits of the major South American ecological regions are from Ab'Saber (1977). Several small regions are grouped together into the large Andean Region.

relatives by an enormous distance (Fig. 1), I suggest that Urich's Tyrannulet should be considered as a distinct species too. Notwithstanding Stotz's (1990) comments that Urich's Tyrannulet is more closely related to Reiser's than to the Greenish Tyrannulet, I suggest that to propose phylogenetic relationships within this group based only on plumage and morphometric characters is premature, and that DNA or alloenzyme data are required in this particular case.

In further studies, one should pay more attention to the possible phytogenetic relationships of Urich's, Reiser's and Greenish

Tyrannulets with Sclater's Tyrannulet *P. sclateri*, from parts of the Andean Region (Fig. 1). This species replaces Reiser's, Urich's and Greenish Tyrannulets geographically and these four species have already been placed in a separate genus, *Xanthomyias* (Hellmayr 1927). It will not be surprising if molecular studies show that Sclater's Tyrannulet represents a link, yet strongly differentiated in plumage, between the phenotypically similar southern *reiseri* and *virescens* and the northern *urichi*.

Acknowledgements

I thank J. Fjeldså for guidance, support and review of the manuscript. For companionship and help during field work I thank D. C. P. Neto, S. F. Balbino, J. Ribeiro, M. S. Brígida and N. Guedes. I thank D. M. Teixeira and J. B. Nacinovic (MNRJ), H. F. A. Camargo (MZUSP), M. LeCroy and G. Barrowclough (AMNH) and H. Schifter (NM) for providing me with all facilities to study the collections under their care. For critical review and linguistic corrections that greatly improved the first draft of this paper, I thank M. E. Petersen and D. W. Snow. My studies are supported by a doctoral scholarship of the Conselho Brasileiro do Desenvolvimento Científico e Tecnológico (CNPq). Financial support for field work and collection studies came from the National Geographic Society (Grant no. 4964-93), Frank M. Chapman Memorial Fund, World Wildlife Fund-US, John D. and Catherine T. MacArthur Foundation, Danish Natural Science Research Council (Grant J. no. 11-0390), Museu Paraense Emílio Goeldi, and Universidade de Brasília.

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Hunting behaviour of the Mantled Hawk *Leucopternis polionota* and the White-necked Hawk *L. lacernulata* in southeastern Brazil

by Paulo Martuscelli

Received 9 May 1995

Two species of hawks in the genus *Leucopternis* occur in the Atlantic forest of southeastern Brazil: the larger, rather buzzard-like Mantled Hawk *L. polionota* and the smaller, more slender White-necked Hawk *L. lacernulata*. Both species are uncommon, the first one being considered near-threatened and the latter rare (Collar *et al.* 1992). Almost nothing is known of the biology of either species, except for a few anecdotal observations (Schubart *et al.* 1965, Sick 1993). During 1990 I was able to make several observations of the hunting behaviour of both species at Ilha do Cardoso State Park (*c.* 25°03′S, 47°53′W). The area is entirely covered by forest from the coastal plain to the island peaks, with a maximum altitude of 950 m (see Barros *et al.* 1991 for site description).

'An individual Mantled Hawk was followed almost daily between 29 May and 11 June, except during rainy spells. In all I accumulated 34 h of observations. During this period the hawk used an area of 5 ha at the transition between the coastal plain and a small hill 80 m high, adjoining a road and other open spaces. Vegetation there was fairly low, the tallest trees reaching 10 m. Two different hunting strategies were observed: hunting passing birds from a perch, and ambushing by the side of a fruiting or flowering plant.

In the study area the hawk was seen to use three perches, usually 5–7 m high, from which it watched for prey. After changing a perch, the hawk was not seen using it again. The longest period the hawk was known to use a perch was three days. The perched hawk was easily visible from a distance, as it used well exposed branches from where it had a broad view of its environs. The hawk took its prey after a rapid flight from its perch aimed at a passing bird, returning to its perch to eat it. These flights were usually shorter than 15 m. Of five observed hunting attempts, three were successful: a White-necked Thrush *Turdus albicollis*, a Squirrel Cuckoo *Piaya cayana* and a Red-tailed Amazon *Amazona brasiliensis*. The predation on the parrot was especially interesting, as the hawk used a perch close to the night roost that a pair of amazons were using every night, striking when they approached. The hawk caught one of the parrots in the air, both falling into the forest amid a violent struggle and loud cries by the amazon.

On six different occasions the hawk perched beside a *Norantea brasiliensis* (Marcgraviaceae), a climbing shrub which was producing abundant inflorescences that attracted many birds. A fruiting tree, *Schinus terebenthifolius* (Anacardiaceae), was close by, also attracting birds. The hawk perched amid the sprawling branches of the *Norantea*, which were 8 m above the ground, watching the birds that came to feed at the flowers, mostly tanagers and hummingbirds. It caught its prey after a short, quick flight from its perch, returning to it with the captured prey. Of 24 attempts, the hawk was successful in three, capturing a White-tailed Trogon *Trogon viridis*, a Red-necked Tanager *Tangara cyanocephala* and a Sayaca Tanager *Thraupis sayaca*.

Apparently the same strategy was employed, by what was probably the same bird, in the successful capture of a Dusky-legged Guan *Penelope obscura*, which was eating the fruits of a *Eugenia bimarginata* (Myrtaceae), a shrub only 3 m high; this was observed outside the main study period. I saw only the moment of the strike, and am not sure if the hawk attacked from a perch or was soaring.

An individual White-necked Hawk was followed between 13 and 22 June in the same area, totalling 15 h of observation. This hawk was observed once following an army ant *Eciton burchelli* swarm, with which was associated a flock consisting of White-backed Fire-Eye *Pyriglena leucoptera*, Plain-brown Woodcreeper *Dendrocincla fuliginosa*, House Wren *Troglodytes aedon*, Grey-hooded Attila *Attila rufus*, White-necked Thrush *Turdus albicollis*, Creamy-bellied Thrush *T. amaurochalinus* and Rufous-bellied Thrush *T. rufiventris*. These birds ignored the hawk, chasing insects side by side with it. The hawk perched at most 1.5 m from the ground, descending to pick insects with its bill. Large insects, such as grasshoppers and walking-sticks, were grabbed in the talons and eaten on the perch. The ants disturbed a 15 cm long land snail *Megalobulimus paranaguensis*, which was taken in the talons. The hawk flew with it to the top of a tree 8 m high and dropped it to the ground. It then carried it up again and repeated the process twice until the shell was broken and it could eat the contents (Martuscelli 1991).

On another occasion the hawk was observed walking on the lawn around the park's headquarters, following a lawnmower together with Southern Lapwings *Vanellus chilensis* and thrushes, and picking up grasshoppers, but keeping its distance from the machine.

Once the hawk was perched by the side of a tree where a couple of Brazilian Tanagers *Ramphocelus bresilius* were exploring an epiphytic bromeliad for food. The tanagers disturbed a big walking-stick and tried to subdue it as it walked from the bromeliad, when the hawk made a short flight, caught the insect, and flew off with it.

This hawk was also observed to use a similar strategy to the Mantled Hawk, perching by the side of a flowering tree, but its attacks were directed at the insects that were flying around it, mainly beetles and dragonflies.

Another White-necked Hawk was found after the study period, more than 10 km away, in taller (20–25 m high) forest where the plain meets the mountain slope. This hawk was following a group of seven Brown Howler Monkeys (*Alouatta fusca*), capturing insects disturbed by the monkeys. This continued for 20 minutes, until the hawk departed.

The Mantled Hawk displayed strategies similar to many buteonine hawks (Brown & Amadon 1989), hunting from a perch. Apparently birds are a major food item, a fact already mentioned in the literature (Brown & Amadon 1989, Sick 1993). The food habits of the

White-necked Hawk are more surprising, as the species seems to specialise on invertebrates, mainly insects, using several techniques to take them, including the use of other animals (humans with lawn-mowers, monkeys and army-ants) as aids in finding them, and apparently preferring insects to birds. In Costa Rica, the Semiplumbeous Hawk *Leucopternis semiplumbea* is also known to associate with monkeys (Boinski 1988). Also, the behaviour displayed while preying on the snail, and the fact that other birds ignored the White-necked Hawk while hunting insects with it, strengthen the conclusion that the White-necked Hawk is an invertebrate specialist, apart from other hawks in its genus.

Acknowledgements

I wish to thank M. Milanelo for help and support during fieldwork. F. Olmos helped with drafting an initial version of the manuscript.

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The migrations of the Arctic Tern

by W. R. P. Bourne & M. B. Casement

Received 21 May 1995

The deduction by Villaseñor & Phillips (1994) that Arctic Terns *Sterna paradisaea* must migrate unseen overland across North America, as already implied by the records plotted by Storr (1958), raises the question what may happen elsewhere. While information on the distribution of the species throughout the world has been summarised by Salomonsen (1967) and Dunn (1985), and the problem of their migration overland in the Old World has been discussed by Alerstam (1985), most attention has been paid to possible movements around the margins of the oceans, and less to any over either the land or open sea. It may therefore be useful to review some comparable records collected at sea over nearly half a century by the Royal Naval Bird-watching Society, both at the British North Atlantic Weather Ships and in their Sea Repors, summarised in its Annual Report *Sea Swallow* (SS) and Figure 1, and some similar inland observations in the Palearctic.

The first problem which arises is the reliability of identifications. While nesting Arctic Terns in breeding plumage may be easy to identify where they characteristically assault observers and allied species are absent, in the Arctic, or where they moult in the pack-ice surrounding the Antarctic, their identification is more difficult along the intervening coasts, where they occur with a number of other closely-related "commic" terns in a protean variety of non-breeding plumages; and despite improved identification (P. J. Grant *et al.* in Sharrock 1980, Harrison 1983) many birds often remain unidentified.

The situation is however simplified by the rarity of allied species far out at sea, where for example of some hundreds of birds that Bourne saw well enough to identify reliably in the centres of both the North and South Atlantic Oceans all appeared to be Arctic, showing a short head and red bill but long tail and dark-edged wing in the air, and red bill, grey underparts and short legs when standing on flotsam in breeding plumage, and a light build and comparatively indistinct greyish markings in the minority in other plumages. Representative RNBWS records are plotted on Figure 1.

Most observations come from the British Ocean Weather Ships stationed in area A (Fig. 1). The total numbers of terns seen here between 1966 and 1973 when there were still four ships on station are shown in Table 1, which indicates that Arctic Terns appear to predominate and other species are indeed scarce out at sea. Arctic Terns have been reported here in every month except January, but usually first appeared in late April, reached a climax in August, when most flew SW, and were last seen in October. About an eighth of a flock of 200 seen at Station India (59°N, 19°W) on 11 August 1971 were immature, with black bills and legs, white foreheads and underparts, and short tails, though there were many adults with red bills and dusky underparts (SS 22: 26). On the other hand, only about a quarter of a

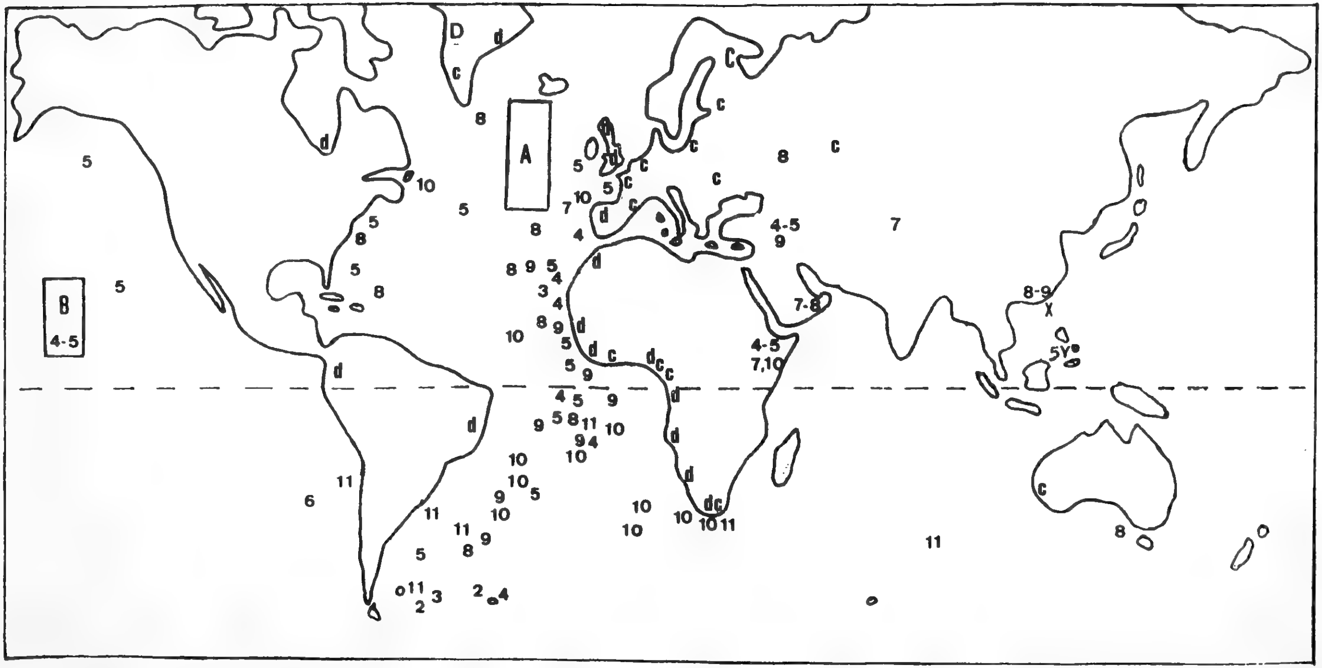

Figure 1. Months when "commic" (when identified, usually Arctic) terns have been recorded by the Royal Naval Bird-watching Society at sea: A, location of North Atlantic Weather Ships (Table 1). B, Trade Wind Zone Oceanography Pilot Study (King 1970). C, Kandelaksha Bay; some distant recoveries c (Bianki 1967). D, Western Greenland (Alerstam *et al.* 1986); distant recoveries d. Aleutian Terns: X, observed in autumn (*Oriental Bird Club Bull.* 17: 50). Y, collected in spring (Lee 1992).

TABLE 1.
Terns *Sterna* spp. at the North Atlantic Weather Ships 1966–1973 (from summaries by J. H. Agnew in *Sea Swallow*).

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.
Arctic	1	1	1	1	1	7	40	2324	36	4
Common						1		3		
Roseate							1			
Little									2	
Sandwich									1	
Unidentified		1		3	48	73	213	1682	147	61
Totals	1	2	1	4	49	81	254	4009	186	65

long, straggling group of over 1000 terns and 100 Manx Shearwaters *Puffinus puffinus* followed White-sided Dolphins *Lagenorhynchus acutus* and Pilot Whales *Globicephala melaena* west there on 28 August 1973 were adult (SS 24: 29). Although Wynne-Edwards (1935) reported that they do not settle on the sea, a group sat on the water to bathe and preen on 17 August 1972, twice rising to mob Great and Arctic Skuas *Catharacta skua* and *Stercorarius parasiticus* (SS 23: 33), and they often sit on drifting objects.

Individuals and smaller groups of "commic" terns may also be seen on migration across the whole width of the North Atlantic (Wynne-Edwards 1935, Bourne 1986, Danielsen *et al*. 1990), along the west coast of Europe, and over the Canary Current off West Africa and the Gulf Stream off eastern North America, where more have been recorded in the spring than the autumn (Lee & Cardiff 1993). Flocks have also often been seen where Salomonsen (1967: 7) speculated that they stop to feed along the equatorial counter-current in the tropical Atlantic, where one mixed flock of seabirds seen well at 03.2°S, 15.2°W on 26 April 1982 by W. F. Curtis was thought to include 75 Sooty *Sterna fuscata*, 25 Arctic, 5 Common *S. hirundo*, 3 Roseate *S. dougallii*, 20 unidentified "commic" terns, and 35 Brown Noddies *Anous stolidus*. A Common Tern ringed in Germany has been recovered at 0.8°N, 18.1°W in January (Muselet 1982), and a number of young Sooty Terns ringed on the Dry Tortugas off Florida in the same area throughout the year (Robertson 1969).

"Commic" terns have also been found during recent voyages between Britain and the Falklands to be widespread on migration in the South Atlantic (Bourne & Curtis 1985; Fig. 1), though here their identification is further complicated by the possible presence of southern species such as the similar Antarctic Tern *Sterna vittata*, since although it is not normally reported north of 30°S there is a specimen in the British Museum (Natural History) said to have been taken between Ascension and St. Helena in the last century (Saunders 1876), though no others have been reported out at sea. We have fewer records elsewhere, but they confirm that some Arctic Terns reach Australasia, where for example Bourne saw two immature birds at

35.6°S, 140.8°E over the edge of the continental shelf off Portland, Victoria, on 1 August 1974. If they stay so far out to sea this may explain a shortage of records in this area. They also occur in the eastern Pacific, where King (1970) reported that they were common on spring migration in area B of Figure 1 in late April and May 1964–65, with others collected further west.

Arctic Terns also appear to cross the Old World as well as North America. Bianki (1967) reported that while most distant recoveries of birds ringed in Kandelaksha Bay of the White Sea (Fig. 1, C) and around the Baltic occurred in the Atlantic, with one in Western Australia and one in the east Antarctic, two fledglings were recovered in August in Russia and the Ukraine (Fig. 1, c). There are also reports from the Bosphorus (Ballance & Lee 1961) and possibly Cyprus (Flint & Stewart 1992) in September (Fig. 1), and old records from the Ukraine in October (Dementiev *et al.* 1951). On the return migration Ash (1983) reports a northerly movement inland from the east coast of Somalia in late April and May, when there are also records in Cyprus (Flint & Stewart 1992) and Turkey, where they have been photographed at nearly 2000 m on Lake Van (Ornithological Society of Turkey 1972, 1975; Fig. 1), though birds have remained in Somalia until July and October (Ash 1983), Masirah Island, Oman, until July and August (Oman Bird Records Committee, 1994; Fig. 1), and one has been collected with Common Terns at nearly 5000 m in Kashmir in July (Whistler 1936).

Thus if the full extent of the transequatorial migration of the Arctic Tern is considered (Storr 1958, Salomonsen 1967, Dunn 1985), it appears that they are widespread in the local summer in both the north and south polar regions, and their main movement between them appears to occur over those parts of the intervening area with a comparatively stable meteorological regime of westerlies and trade-winds. They appear to avoid the area with alternating monsoons around S.E. Asia, where they may be replaced by the Aleutian Tern *Sterna aleutica*, which has recently been reported at Hong Kong in the autumn and in the Philippines in the spring (*Oriental Bird Club Bull.* 17: 50, Lee 1992; Fig. 1), and presumably winters somewhere to the south. Alerstam (1985) has already postulated in the light of such records that like many other Charadriiformes Arctic Terns must carry out their migrations by a series of long flights between a succession of good feeding places. These appear to include the areas of marine turbulence where nutrients and plankton are brought to the surface by vertical water movements, leading to the presence of many invertebrates and small fish around ice in the polar regions, along the marine fronts over the continental shelves, over eddies in the boundary currents offshore, and over upwelling along the subtropical convergences in middle latitudes and equatorial current systems.

Their progress seems more leisurely in the autumn, when Bianki (1967) reported that birds ringed in the Kandelaksha Bay of the White Sea and the Baltic usually appear to move south down the east side of the Atlantic, though some may go south overland. Alerstam (1985) has described how those passing through the Baltic area fly WSW at heights exceeding 1000 m across Scandinavia, and Alerstam *et al.* (1986) how those ringed in western Greenland move SE towards western Europe, where numbers linger for a while offshore and according to RNBWS observations at the Weather Ships out at sea, presumably feeding before starting south. Observations with radar of a regular coasting movement attributed to terns in the autumn in Ghana (Grimes 1977) suggest that many of them may coast south offshore at this season as suggested by Storr (1958) and Salomonsen (1967), but the records summarised here and by Villaseñor & Phillips (1994) also indicate that at least some must go south over Eurasia and North America, and in the Pacific as well.

On the other hand, no similar coasting movements were detected with radar in Ghana in the spring (Grimes 1977), so it seems possible that after moulting in the Southern Ocean during the local summer the birds may then fly back north on a broader front from whatever point they may have reached, at least those in the Atlantic stopping to rest and feed after their migration and wait for good weather off western Europe and eastern North America before going on to the breeding grounds (Alerstam *et al.* 1986). This may explain some anomalous ringing recoveries, including two-year-olds bred in Britain which were recovered in Russia in June and July, other two-year-olds from the White Sea found in Greenland in July (Dunn 1985) and from Greenland found in Hudson's Bay in July, a three-year-old from Greenland found in the Brazilian highlands in May, and a ten-year-old from Greenland found at over 2000 m in the Colombian Andes in June (Alerstam 1985).

While Arctic Terns may often stop to feed with flocks of other species, on migration they are usually seen moving singly or in small parties on a broad front out at sea; they apparently cross any land in their way at altitudes of thousands of metres (Alerstam 1985). It seems probably that, like many other birds, they prefer to take off for the longer flights in good weather with tail winds, and fly high where the winds are stronger while they remain favourable, so that few are seen then. But they may descend, presumably because the winds are weaker at lower levels, and if necessary settle, when the winds become adverse (Alerstam 1985). Thus a wave of birds regularly crosses Britain with the onset of fine weather to the south in May, when a few descend briefly at such places as sewage farms (Hinde & Harrison 1949, Hinde 1951, personal observation), and there are larger influxes after westerly gales, as in 1947, 1985 and 1991 (Gibb 1948, Kramer 1995).

The need to adjust the altitude of flight and heading to minimise drift by the wind may explain why most birds were reported heading SW against the prevailing westerlies at the North Atlantic weather ships in the autumn when the ringing returns suggest they should have been heading SE, but a fledgling from New England was recovered in northern Scotland (Hawkesley 1949), and north into the prevailing NE trades in the western Atlantic (Lee & Cardiff 1993) and east Pacific (King 1970) in spring, whereas few or none are to be seen at these places when they may fly high with the more favourable NE trade winds in autumn and westerlies in spring.

Acknowledgement

We are indebted to Dr Euan Dunn for much assistance with the literature.

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Supernumerary rectrices

by Kenneth C. Parkes

Received 31 May 1995

In the past several years there has been a succession of papers on abnormal numbers of rectrices and remiges in birds, the most recent being that of Saini & Toor (1988). In that paper will be found a list of references to other papers on the subject, which will not be repeated here.

Saini & Toor state that "cases of anisorectricial birds have been reported in 45 species belonging to 16 families (Hammer 1985)". This wording gives the impression that this is the total number of such reports for all birds, whereas it is merely the figure for those birds that were handled by Hanmer and her colleagues in Malawi and Mozambique. It does not include abnormal rectrix numbers reported by other authors.

I have been waiting in vain for any of this series of papers to mention that I published a note on an "anisorectricial" specimen as long ago as 1950, but I can understand that authors based in Africa and Asia (as all of the authors of these recent papers have been) may not have access to the standard North American journals. I therefore depart from custom and repeat, in abridged form, the information published in that note (Parkes 1950).

Specimen no. 15791 in the collection of Cornell University, Ithaca, New York, is a Yellow-winged or Carmiol's Vireo *Vireo carmioli* collected by Austin Paul Smith at 9000 feet elevation on Volcán Turrialba, Costa Rica, on 24 November 1922. The specimen appears normal in all respects save that it possesses 15 rectrices, all fully grown with no basal sheathing. The three extra feathers are morphologically of the shape of the normal central pair, with the rachis centrally located. The follicles appear to have been duplicated laterally rather than dorsoventrally, making it difficult to determine which three of the five "central" rectrices are the supernumeraries.

Saini & Toor also state that "normally, birds have a species-specific fixed number of primaries, secondaries and rectrices". This is probably true for most passerines; with sample sizes ranging from 50 to 2238 for 30 passerine species, Hanmer recorded only 20 individuals, of 14 species, with supernumerary rectrices. Many but not all non-passerines tend to have fixed numbers of rectrices. In my 1950 note I cited a personal communication from Professor A. A. Allen to the effect that supernumerary rectrices "are not uncommon in the Ruffed Grouse (*Bonasa umbellus*) and perhaps in other gallinaceous birds". Subsequently Short (1967), in connection with his review of the genera of grouse, found that rectrix number in this subfamily (Phasianidae, Tetraoninae) is exceptionally variable. In 168 museum specimens of *Dendragapus obscurus* he found individuals with 16, 17, 18, 19, 20 and 22 rectrices, although the earlier literature had given 20 rectrices as a generic character for *Dendragapus*. Short found geographic variation in this species such that the rectrix numbers in one subspecies group clustered around 18, and in another group around 20. Similarly, in 66 *Canachites* (now *Dendragapus*) *canadensis* he found 14, 15, 16, 17 and 18 rectrices (modal number 16), and in 396 *Bonasa umbellus* 14, 16, 18, 19 and 20 (modal number 18).

I suspect that a study of similar numbers of specimens of some other galliform species might well reveal this kind of variability. Other non-passerines are obviously more consistent. Saini & Toor found only one supernumerary rectrix among 206 specimens of "Ring" [=Collared] Dove *Streptopelia decaocto*, and none in 127 "Blue Rock Pigeon" [=Rock Dove] *Columba livia*. This would suggest stability in the number of rectrices in Columbidae, but Hanmer (1985) and her colleagues examined 7 African species of this family, with sample sizes from 8 to 193, and found at least 1 supernumerary rectrix in all species except *Streptopelia decipiens* (sample size 57). They had only 8 *Treron australis*, but one of these was their only columbid to exhibit 2 supernumerary rectrices.

Somadikarta (1984) introduced the term "polyrectricyly" for the "occurrence of more than a normal number of tail feathers in a bird". Although I find this word difficult to remember and impossible to pronounce, it is probably useful as an available noun for the phenomenon of supernumerary rectrices.

Hanmer (1985) introduced the term "anisorectricial" for tails with abnormal numbers of rectrices, but the term is of dubious usefulness. Her Table 2 is a summary of families and genera in which "anisorectricial" birds were found at the Malawi and Mozambique study sites, including figures for percent aberrant. Those figures are misleading, however, as they include birds with rectrices both greater and fewer than the normal number, and one must consult her Table 1 to learn how many individuals had supernumerary rectrices, and then compute a separate percentage figure. The explanation for abnormal numbers of rectrices is unknown, although both Hanmer and Saini & Toor postulate vaguely that such numbers may be "of phylogenetic origin", presumably reflecting a continuing evolutionary trend toward the reduction of rectrix numbers for those with abnormally few rectrices, and some sort of "throwback" phenomenon for those with supernumerary rectrices. But there is no evidence that the same mechanism is responsible for both missing and extra rectrices, and (especially in cases of odd-numbered and thus asymmetrical rectrices, as in the *Vireo* mentioned above) I suspect that the explanation is more probably a developmental accident than any recapitulation of a more primitive number of rectrices. Somadikarta (1984) stated that "Further investigations will be needed to show whether polyrectricyly is caused by chromosomal anomaly". Such investigations will, of course, be difficult; it might, however, be possible to determine the genetic basis controlling rectrix number by selective breeding of a domestic species.

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IN BRIEF

A NEW RECORD OF THE SICKLE-WINGED NIGHTJAR *ELEOTHREPTUS ANOMALUS* FOR SOUTHERN BRAZIL

The Sickle-winged Nightjar *Eleothreptus anomalus* is a bird of open areas, ranging from central Brazil to northeastern and eastern Argentina, including Paraguay and Uruguay. There are few recent records, and it is considered to be endangered (Bernardes *et al.* 1990, Collar *et al.* 1992). In Brazil, during the last 30 years, there are only four known records: in 1971 in Pântano Grande (Rio Grande do Sul); in 1978 at the Parque Nacional de Brasília (Distrito Federal); in 1986 at the Reserva Biológica Cambuí, municipality of Curitiba (Paraná); and in 1988 in Laranjeiras, municipality of Piraquara (Paraná) (Straube 1991, Belton 1994).

On 27 August 1994 we found a specimen in a wetland in the Fazenda Santa Rita, municipality of Palmeira, Paraná (25°18′S, 49°52′W); it had fallen to the ground with a broken wing, possibly as a consequence of collision with a power line which passed over the place at a height of approximately 10 m. The area is characterized by extense fields, and patches of *Araucaria angustifolia* (Parana Pine) forest. The specimen was collected and proved to be an adult male with developed gonads; it has been deposited in the Museu de História Natural "Capão da Imbuia", Curitiba (MHNCI 4240). An interesting aspect is that this record once again concerns a crippled individual. All the other recent records were traffic victims.

In the surroundings of the Fazenda Santa Rita, as well as in the entire state of Paraná, there has been drastic destruction of natural habitats, with total loss (e.g. in the case of agriculture), or drastic changes as a consequence of drainage, cattle grazing or burning. In the metropolitan area of Curitiba, where all the previously known records of the species in Paraná are concentrated, the surviving natural habitats are being rapidly destroyed, mainly as a consequence of the extraction of sand from the subsoil. The habitat loss in this area may become almost complete when two dams and a road, which are planned, have been built, thus extirpating the Sickle-winged Nightjar locally.

We thank Júlio de Moura Leite and Dante M. Teixeira for critically reading the present text, and the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for the financial help. We would also like to acknowledge the help of Jorge B. Nacinovic (MN) in the revision of this manuscript.

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ROBERTO BÓÇON

29 June 1995

THE NEST OF BLACKISH-HEADED SPINETAIL *SYNALLAXIS TITHYS*

On 8–9 January 1995 at Tambo Negro (4°24′S, 79°51′W) in Prov. Loja, Ecuador, I found three nests of *Synallaxis tithys*, a poorly known spinetail endemic to southwestern Ecuador and adjacent northwestern Peru. These appear to be the first records of nesting in this species.

The first nest was found on 8 January in a vine tangle in the understorey of *Ceiba trichistandra*-dominated deciduous forest about 5 m above a dry streambed. My attention was first attracted to the nest by the trilled calls of an adult bird, which brought a 15 cm twig to the nest. The nest was placed between the main trunk of the tree and a low bough placed at 60° to it. The body of the nest was about 30 cm above the base of the fork and was wholly supported by the vines, and appeared to be the standard ball of sticks typical of *Synallaxis* spinetails

(Ridgely & Tudor 1994; *The Birds of South America,* vol. 2); it was about 40 cm wide at its widest point and about 30 cm deep. On 9 January, once again attracted by the calling of the birds, I found two more nests; they were smaller and more concealed, both about 3 m above either the streambed or the forest floor.

During my visit the dry season was coming to an end and heavy rain had fallen in the area just before my arrival. That *S. tithys* breeds at this time is to be expected, as recent studies have shown that many species breed in the rainy season in southwestern Ecuador (Best *et al.* 1993, *Bull. Brit. Orn. Cl.* 113: 234–255). The nest sites were close to one another and the species was reasonably common in the area; this may have been due to concentration at the site caused by loss of habitat in the surrounding area.

I would like to thank Brinley Best for his encouragement and his comments on the first draft of this note.

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CHRIS S. BALCHIN

3 July 1995

BOOKS RECEIVED

Williams, T. D. 1995. *The Penguins.* Pp. xiv+295, 8 colour plates, text-figures, maps and sonagrams. ISBN 0-19-854667-X. Oxford University Press. £35. 25 × 20 cm.

The second in the series of bird family monographs, organised on the same plan as that noticed in the previous issue of the *Bulletin,* also deals with a family of moderate size (17 species in 6 genera). There is, as would be expected, far more statistical data in the species accounts, summarising a vast amount of research over the last 35 years. The chapter on conservation is refreshingly outspoken in putting man in the dock for all the most serious threats facing penguins, as also most other forms of life. The colour plates by J. N. Davies, showing adults, immatures and chicks of all the species, are excellent. For those needing a less detailed account of the family, OUP have published a much briefer summary in paperback, *Penguins of the World,* by Pauline Reilly (1994), using the colour plates and other illustrations from volume 1 of the *Handbook of Australian, New Zealand and Antarctic Birds.*

Holloway, S. 1996. *The Historical Atlas of Breeding Birds in Britain and Ireland.* Pp. vii+476, maps, text-figures and tables. ISBN 0-85661-094-1. T. & A. D. Poyser. £25. 26 × 19 cm.

The last quarter of the 19th century was a period of rapid change, both in the environment and in the human attitude to birds. It was the time when "the persecution of birds and mammals was at its most thoughtless", but also the time when, among a small but growing section of society, active protection was being promoted. It followed a period, beginning about 1840, when the number of local publications on birds began to increase rapidly, culminating in the county avifaunas that began with Harting's *Birds of Middlesex* in 1866. By the early 20th century most of the English and Welsh counties had their known avifaunas published. This was therefore a good period to choose for a historical survey that might be compared in some detail with the later BTO 1968–72 breeding bird atlas.

The author has drawn on all available published sources. In an introductory chapter he deals with the history of the Watsonian vice-county system of England and Wales, the Faunal Districts of Scotland, and the late 19th century counties of Ireland, which are used as the basis of his maps for 1875–1900. For all authors of the main county and regional avifaunas for this period there are brief biographical details—a valuable addition for readers interested in the sociology of ornithology. The late 19th century environment is discussed in a 10-page chapter, and is followed by the species accounts which form the bulk of the book. Each species has a map, with a facing page of text.

While the main focus is on the period 1875–1900, earlier and later changes in distribution are discussed in some detail, so that these accounts provide a useful, abundantly documented, picture of changes in breeding distribution over the last 200 years. The maps are, of course, a most important part of the whole. The main maps, based on the vice-counties and other areas mentioned above, make use of four shades of brown, brown hatching, and grey shading, to show six status categories: regular breeding with four categories of abundance (as assessed from the published accounts on which they are based), occasional breeding, and probable but not confirmed breeding. There are also small inset maps in black, reduced from the BTO atlas, to show breeding distribution in 1968–72. Unfortunately these are so small that a magnifying glass is needed to make out the details of distributions that are mainly coastal. But this will probably matter little to most readers, who are likely to possess the BTO atlas. Altogether, this is a useful addition to the British ornithological literature.

Wege, D. & Long, A. J. 1995. *Key Areas for Threatened Birds in the Neotropics*. (BirdLife Conservation Series No. 5). Pp. 311, maps, tables and text-figures. ISBN 0-946888-31-0. BirdLife International. £24.25. 24.5 × 17 cm.

This is an essential source of information for anyone concerned, whether generally or practically, with the conservation of the 290 species of mainland (non-Caribbean) neotropical birds considered at risk of extinction (over 25% of all such birds worldwide). The criteria for identifying a 'key area' are discussed in a short introductory chapter. Briefly, each threatened species should, where possible, be represented within at least 3 key areas, and the areas selected are those that are known or most likely to hold viable populations of the species in question, and if there is a choice are those which are the largest and most intact and, if possible, already have some degree of protection. The main bulk of the book is a country-by-country listing of the 596 key areas in 21 countries. The entry for each key area includes its geographical coordinates, information on its size (where known), habitats, and protected status, followed by an annotated list of the threatened species known to occur or to have occurred within it.

In addition to those currently engaged in the conservation of the amazingly rich neotropical avifauna, no ornithologist intending to travel to South or Middle America should be without this book: it can especially be recommended to university expeditions hoping to make a worthwhile contribution in a long vacation.

Byers, C., Olsson, U. & Curson, J. 1995. *Buntings and Sparrows*. Pp. 334, 39 coloured plates, numerous maps and text-figures. ISBN1-873403-19-4. Pica Press. £28.00. 24 × 17 cm.

Following in what is now almost a tradition of well-illustrated (part or whole) bird-family guides, this covers the Old World buntings and Nearctic sparrows. Its scope is mainly Holarctic but extends beyond into the tropics by including all the African buntings (all in *Emberiza*), the South American species of 3 North American genera, and the Oriental Crested Bunting. The main omission, for taxonomic completeness, is thus the Neotropical species in genera not represented in the north, whose inclusion would have added greatly to the bulk of the book. The text is very thorough and sound; the plates, by Clive Byers, superb.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the Editor, Dr D. W. Snow, The Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*.

A contributor is entitled to 10 free offprints (16 if 2 or more authors) of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Additional offprints or offprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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Registered Charity No. 279583

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

COMMITTEE

Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

ISSN 0007-1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 116 No. 3 September 1996

FORTHCOMING MEETINGS

Tuesday, 5 November 1996. Nigel Hunter will speak on **"Birds of Botswana".** Nigel has spent the past 13 years in Botswana, including four years as Coordinator of Land Use Planning (1986–90), and the last five years as Director of Wildlife and National Parks (1990–95). He is currently back in the UK, working as Head of Wildlife Management at the Natural Resources Institute.

Applications to the Hon. Secretary by 22 October, please.

Tuesday 10 December 1996. Club Social Evening. By popular request, there will be an additional meeting. There will be no speaker, but Members are invited to bring along one or two slides (or a specimen!) of a bird of topical interest, and to speak **for not more than five minutes** about it. The aim will be to generate discussion, and to facilitate the exchange of information between Members.

Applications to the Hon. Secretary by 26 November, please.

Tuesday 21 January 1997. Professor C. J. Feare and Dr Elaine Gill will speak on **"The biology of pink omelettes"**. Chris began studying Seychelles Sooty Terns during an Aberdeen University Research Fellowship in the early 1970s, and never lost interest in these birds or the islands, during an ensuing career with the Ministry of Agriculture's Central Science Laboratory (CSL). There, he studied the biology of pest birds, especially Starlings, but recently took early retirement to establish his own consultancy on bird management, to write books and to continue Sooty Tern studies. Elaine spent thirteen years studying the ecology of free-ranging ponies, on which she has written a book, before joining CSL to investigate the potential of naturally-occurring chemicals to deter birds and mammals from feeding on crops. Despite the absence of horses, she quickly adapted to spending her leave on tropical islands full of Sooty Terns.

Applications to the Hon. Secretary by 7 January, please.

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London SW7, at 6.15 p.m. for 7 p.m. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from 6.15, and a buffet supper, of two courses followed by coffee, is served from about 7.00. (A vegetarian menu can be arranged if ordered at the time of booking.) Informal talks are given on completion.

Overseas Members visiting Britain are particularly welcome at meetings. For details in advance, please contact the Hon. Secretary: Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA.

Tel/Fax: 01730-825280 for late bookings and cancellations.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 116 No. 3 Published 30 September 1996

The eight hundred and fifty-seventh meeting of the Club was a Symposium on "Avian Taxonomy from Linnaeus to DNA", held jointly with the Linnean Society of London, at Burlington House, Piccadilly, on Saturday, 23 March 1996. The total number attending, including speakers, was 101.

The following BOC Members were present: M. A. Adcock, P. J. Belman, Miss H. Baker, I. Bishop, P. Bull, D. R. Calder, Cdr M. B. Casement RN, Dr R. A. Cheke, I. D. Collins, G. S. Cowles, S. J. Farnsworth, P. S. Gascoigne, F. M. Gauntlett, Revd T. W. Gladwin, A. Gibbs, Dr J. J. D. Greenwood, D. Griffin, Dr C. J. Hazevoet, C. A. R. Helm, S. Howe, J. R. King, Dr R. Liversidge, N. S. Malcolm, Dr C. F. Mann, Dr J. F. Monk, R. G. Morgan, Mrs A. M. Moore, G. Morel, Mme M. Y. Morel, Mrs M. Muller, R. E. F. Peal, Dr R. P. Prys-Jones, N. Redman, Dr T. J. Roberts, G. Sangster, R. E. Sharland, Dr N. Skinner, G. A. Smith, Dr D. W. Snow, N. H. F. Stone, Dr J. D. Summers-Smith, A. R. Swash, C. F. Turner, M. P. Walters, Mrs F. E. Warr, Dr R. Wilkinson.

The programme opened at 10.00 with welcoming remarks by David Griffin (Chairman BOC), and an introduction by Dr J. J. D. Greenwood (Director BTO). The morning session, chaired by Dr C. Humphries (Botanical Secretary, Linnean Society), was on the theme of "The legacy of Linnaeus and ensuing controversies". Papers were given by:

Dr R. Liversidge (Alexander McGregor Museum, Kimberley, South Africa)—"Bird taxonomy from Linnaeus to DNA: an introductory critique"

Dr R. Zink (University of Minnesota, USA)—"The debate over species concepts and its implications for ornithology"

Dr D. W. Snow—"Should the biological be superseded by the phylogenetic species concept?"

Dr C. G. Violani (University of Pavia) and F. Barbagli (University of Florence)—"Salvadori, Giglioli and Arrigoni: aspects of the trinomial controversy in Italian ornithology".

The first afternoon session was chaired by Dr Robert Prys-Jones (Natural History Museum) on the theme of "DNA and other novel methods". Papers were given by:

Dr D. T. Parkin (University of Nottingham)—"Molecular probes for identification of raptors"

Dr K. E. Mikhailov (Palaeontological Institute, Moscow)—"Bird taxonomy based on egg-shell structures"

This was followed by tea and a poster session, on completion of which Dr J. J. D. Greenwood chaired the final session on "Applications", with papers given by:

Dr A. G. Knox (Buckinghamshire County Museum)—"The Impact of taxonomic changes on the western palaearctic avifauna"

Dr D. A. Russell (American University of Cairo)—"The Horus falcon: X-ray identifications of Egyptian mummified birds"

Dr N. J. Collar (BirdLife International)—"Taxonomy and conservation: chicken and egg".

It is planned that some of these papers be published, either in the *Bulletin* or as a separate volume of Proceedings.

The eight hundred and fifty-eighth meeting of the Club was held on Tuesday, 23 April 1996, at 6.15 p.m. 36 Members and 17 guests attended.

Members attending were: D. Griffin (*Chairman*), D. J. Fisher (*Speaker*), P. J. Belman, P. J. Bull, Miss H. Baker, Mrs D. M. Bradley, Cdr M. B. Casement RN, Professor R. J. Chandler, G. D. Field, F. M. Gauntlett, C. A. R. Helm, I. T. Lewis, K. Kazmierczak, Lt Col. P. S. Kerr-Smiley, R. H. Kettle, B. A. E. Marr, Dr C. F. Mann, T. R. Mills, Dr J. F. Monk, D. J. Montier, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, Dr S. L. Olson, S. Parry, R. C. Price, Dr R. P. Prys- Jones, Dr C. Ryall, S. J. R. Rumsey, P. J. Sellar, Dr J. T. R. Sharrock, N. H. F. Stone, C. W. R. Storey, Dr D. H. Thomas, M. P. Walters, Cdr F. S. Ward RN.

Guests attending were: Mrs S. Griffin, Mrs J. Bull, Mrs C. R. Casement, Major F. C. W. Courtenay-Thompson, Ms C. Dove, Dr D. Foskett, Mrs M. H. Gauntlett, Mrs J. M. Gladwin, L. Hawkins, Mrs S. Lewis, Mrs J. Mills, Mrs M. Montier, Mr P. J. Moore, C. A. Muller, Mr B. O'Brien, Mrs H. Price, R. Ranft.

After supper, David Fisher spoke on "Birds of Mongolia", illustrating his talk with slides, taken whilst leading five Sunbird tours (1981–87) to Siberia and Mongolia. These visits took place during late May to early June, which proved the best period for migrants. The area has been little visited because, although an independent country, Outer Mongolia, also known as the People's Republic of Mongolia, was under Soviet domination for most of this century, and therefore part of the Eastern Bloc until its recent collapse. Inner Mongolia is part of China. The habitat varies widely, with the flat Gobi Desert in the centre, bordered by spectacular mountain ranges, each with different avifaunas, and several large lakes. The Kentei mountains to the northeast are covered in coniferous and deciduous forests, similar to the Siberian forests further north, where breed many Palearctic families such as owls, woodpeckers, warblers and buntings. The Altai Mountains to the southwest have a strongly Himalayan avifauna, with vultures, snowcocks, wallcreepers, accentors and rosefinches well represented.

Previous papers on the area include an expedition organised by the Russian Geographical Society, in 1923–26, and published in *Ibis* in 1932. Alan Kitson spent several summers there in the late 1970s, and wrote a few identification articles in *British Birds*.

The vegetation was generally very sparse, but provided essential cover for passing migrants. Even the small central park in the capital of Ulan Bator provided refuge for an astonishing variety and number of birds: scarce residents, such as Azure-winged Magpie and Azure Tit, and many migrants, including several species of thrush—Eyebrowed, Naumann's, Dusky and the scarcer White's Thrush; also buntings (Yellow-breasted, Black-faced, Little and Chestnut-eared), and warblers. Counts of 50 Brown, 50 Red-breasted and 15 Sooty Flycatchers were made.

Highlights were Demoiselle Cranes and Great Bustard en route to Hujurt and Karakorum, also raptors including ground-nesting Upland Buzzards. Grebes, cormorants, pelicans and spoonbills, herons and other waterfowl were prolific at Tatsin Tsaagan Nor, also 25–30 species of wader, and gulls including Great Black-headed, Black-headed, Brown-headed, Glaucous, and Relict Gull *Larus relictus*; the first nesting colony of the latter was discovered in Central Asia in 1968, and led to its recognition as a full species. In 1981, at least 7 displaying adults were seen; in 1982, *c*. 50 adults and a nesting colony was found; in 1983 the water levels were lower, with at least 10 adults, but no nesting confirmed; in 1985, the lake was dry.

Other memorable records were made at visits to Orok Nor (nesting Whooper Swans, Bearded Tits, and Henderson's Ground Jays), an area of Saxaul Forest (Saxaul Sparrow and Houbara Bustard); also the Valley of the Yol, Gobian Altai, with breeding Oriental Plover, Lammergeier, Kozlov's Accentor, Altai Snowcock, Wallcreepers, several species of snowfinch; and Terelj (five species of woodpecker, Wryneck, Red-flanked Bluetail, Daurian Redstart, Siberian Blue Robin, White-cheeked Starling and White-throated Rock Thrush).

It is clear that Mongolia provides an important staging-post for migrants overflying between Siberia and Southeast Asia, and has a rich breeding avifauna, which merits further exploration by ornithologists.

The eight hundred and fifty-ninth meeting of the Club was held on Tuesday, 21 May 1996, on completion of the AGM, at 6.15 p.m. 26 Members and 7 guests attended.

Members attending were: D. Griffin (*Chairman*), M. A. Adcock, P. J. Belman, I. R. Bishop, Miss H. Baker, Dr K. B. Briggs, Cdr M. B. Casement RN, Dr R. A. F. Cox, S. J. Farnsworth, D. J. Fisher, A. Gibbs, Revd T. W. Gladwin, R. H. Kettle, Dr C. F. Mann, D. J. Montier, Mrs A. M. Moore, Mrs M. N. Muller, R. E. F. Peal, R. S. Pritchett, Dr R. P. Prys-Jones, Dr C. Ryall, R. E. Scott, N. H. F. Stone, Dr D. W. Snow, M. P. Walters, R. W. Woods.

Guests attending were: Dr B. Hughes (*Speaker*), Mrs G. Bonham, Mrs F. Farnsworth, Mrs S. Griffin, Mrs J. M. Gladwin, Mrs M. Montier, Mr P. J. Moore.

In the course of supper, the Chairman, Mr David Griffin, made a presentation on behalf of Members and friends, to the retiring Hon. Secretary, Mrs Amberley Moore.

He recalled that Mrs Moore began as Hon. Secretary in 1989, in the middle of preparations for the Club's Centenary celebration, and for the past seven years had not only maintained the smooth running of the Club and provided an excellent series of speakers, but she had also done much to promote the image of the Club with other societies, both at home and overseas.

Her contribution to the life of the Club had been exceptional, and the Committee was very happy that she had agreed to continue serving the Club as Chairman of the Occasional Publications Sub-committee.

At the same time as she had been Hon. Secretary of the Club, she had also been Secretary of the West African Ornithological Society, and she and her husband Peter evidently had fond memories of the many years they had spent in West Africa. She had spoken to the Club in January 1992 on "Ornithology in the search for the course of the River Niger". Members and friends had therefore clubbed together to commission a painting of a scene on the River Niger, by the eminent artist Bruce Pearson. The Chairman then presented this beautiful and evocative painting to Mrs Amberley Moore, to the general and enthusiastic applause of all present.

After supper, Dr Baz Hughes spoke on "The White-headed Duck *Oxyura leucocephala* and the threat from the Ruddy Duck *O. jamaicensis* in Europe". His presentation was illustrated with slides prepared by the RSPB and the Wildfowl & Wetlands Trust for the UK Ruddy Duck Working Group. The White-headed Duck is a member of the "stifftail" group, and the only representative present in Europe and Central Asia. The world population has declined from about 100,000, at the beginning of this century, to about 19,000. By 1977, the Spanish numbers had fallen to just 22 birds, due to persecution, hunters, and loss of habitat. This sparked a massive and costly conservation effort by Spanish Government and conservation organisations, and a rise in numbers to almost 800, by 1990. The future of this species in Spain was thought to be secure, but is now threatened by a new and pervasive threat—the spread of the Ruddy Duck, introduced from North America.

The Ruddy Duck is native to North America, with a population of *c.* 600,000 and increasing; there is no evidence that this species has reached Europe without human help. In the 1930s, Ruddy Ducks were introduced to collections in Britain; some of these escaped and first nested at Chew Valley Lake, in Avon, in 1960. The population has since grown at an alarming rate, and is now continuing at a current annual increase of about 10%. The present UK population is estimated at 3500 wintering birds, with around 600 breeding pairs. They are now widespread in England, Scotland, Wales and Northern Ireland, with greatest concentrations in the West Midlands, Cheshire and Yorkshire.

The substantial increase in numbers is due to a number of factors, contributing to a notably high reproductive capacity compared with other wildfowl. Ruddy Ducks are highly aggressive, particularly during the courtship and breeding season, readily attacking other species, and are thus a threat to competing species such as Little and Black-necked Grebes. More importantly, they readily hybridise with other stifftails, in particular the White-headed Ducks in Spain.

There is strong circumstantial evidence to suggest that these Ruddy Ducks originate in the UK, although proof is hard to establish because Ruddy Ducks are very difficult to catch and tag, or ring. The UK Ruddy Duck Group was formed in February 1992, with objectives to advise aviculturists of the problem; to hold regular international meetings to discuss the threat; to initiate research into Ruddy Duck distribution and control measures; and to inform the public via press releases. Fifty delegates from ten countries attended an international meeting in the UK in March 1993, at which it was agreed that the range expansion of the Ruddy Duck in the western Palearctic had to be stopped, to ensure the future survival of the White-headed Duck. Research into possible control methods in the UK concluded that shooting during the breeding season was the most effective.

The problem is being tackled on an international scale with control measures also being planned in France, Morocco, Netherlands and Portugal. Dr Hughes concluded with the question: in the face of overwhelming circumstantial evidence, can we shirk our international responsibilities and disregard the need to save the White-headed Duck? Anyone requiring further information on the Ruddy Duck issue should contact Dr Hughes at WWT (Slimbridge), tel: 01453 890333 Ext. 226.

The Prince and the Republican*

by James A. Jobling

The Andean Condor *Vultur gryphus* was the first bird species described by the father of zoological nomenclature, Carl Linnaeus, in 1758. The Araguaia Woodcreeper *Hylexetastes brigidai* was described by José Cardoso da Silva, Fernando Novaes, and David Oren in 1995. Those intervening years have seen over 50,000 generic, subgeneric, specific, and subspecific names proposed for birds, usually by single authors (although the present trend seems to call for a minimum of three authors, e.g. Udzungwa Forest Partridge *Xenoperdix udzungwensis* Dinesen, Lehmberg, Svendsen, Hansen, and Fjeldså, 1994; Nechisar Nightjar *Caprimulgus solala* Safford, Ash, Duckworth, Telfer, and Zewdie, 1995). Linnaeus's unillustrated description of *Vultur gryphus* totalled twenty-seven words and abbreviations, including two references and an indication of habitat. *Hylexetastes brigidai* was dealt with in nearly seven closely printed pages, including two sketchmaps, three pen and ink drawings, and nearly a page of references. The striking differences between the two descriptions highlight the tightening procedures which have accompanied the advances made in nomenclature over 237 years. Linnaeus had been an innovator, a free agent, whose system, simpler yet superior to anything that had gone before, was eagerly adopted by the world's scientific community. If the ornithologists of the twentieth century wish to ensure that their new names are enshrined for posterity they must closely follow the diktats of the current International Code of Zoological Nomenclature (ICZN).

The scientific names proposed for birds may be divided statistically as follows (percentages as totals of currently recognized taxa): (1) morphonyms (Greek *morphe*, form; *onuma*, name), generic 44.8%, specific 56.7%; (2) eponyms (Greek *eponumos*, called after), generic 6%, specific 19%; (3) aboriginyms (Latin *aborigines*, natives), generic 12.1%, specific 3.5%; (4) toponyms (Greek *topos*, place), generic 1.8%, specific 11.8%; (5) taxonyms (Greek *taxis*, arrangement), generic 9.9%, specific 3%; (6) bionyms (Greek *bios*, life), generic 9.7%, specific 2.4%; (7) ergonyms (Greek *ergon*, work), generic 7.3%, specific 2%; (8) phagonyms (Greek *phagein*, to eat), generic 5.6%, specific 0.4%; (9) gerynyms (Greek *gerus*, voice), generic 2.6%, specific 1.2%.

Morphonyms refer to the plumage, colours, and physical characteristics of birds. The specific name *Panurus biarmicus* was possibly Linnaeus's (1758) attempt at latinizing Eleazar Albin's (1738) names "Parus beardmanica" and "The Beardmanica" for the Bearded Tit with reference to the black moustaches of the cock bird. However, according to Newton and Gadow (1896) the name is a toponym, after the region of Biarmia, an old term for the district of Perm in northern Russia. Tommy Tyrberg (pers. comm.) supports this etymology (from Old Norse "Bjarmaland", the part mythical area around the White Sea mentioned in several sagas and mediaeval chronicles). At first sight the

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*Based on a talk given to the British Ornithologists' Club on 20 February 1996.

generic *Anodorhynchus* for the Hyacinthine Macaw *A. hyacinthinus* seems a pointless name (Greek *anodon*, toothless; *rhunkhos*, bill), since no recent birds have teeth. The name, however, refers to the un-notched bill of this huge parrot compared to other macaws *Ara*. Incidentally, Geoffroy Saint-Hilaire and Baron Cuvier claimed that embryo parakeets *Psittacula* showed traces of teeth such as occurred in ancient birds and their dinosaur cousins, a startling 'discovery' that led to the coining of *Palaeornis* (Greek *palaios*, ancient; *ornis*, bird) by Vigors (1825). The seemingly obvious and, therefore, pointless name *Alaemon alaudipes* ("lark-footed [lark]") given to the Hoopoe Lark becomes more acceptable when it is realized that, because of its curved bill and striking pied wing-pattern, the species was originally described as a type of Hoopoe *Upupa*. Lastly in this category may be mentioned *Larus atricilla* ("black-tailed gull"), Linnaeus's name (1758) for the Laughing Gull. The erroneous use of New Latin *cilla* for "tail" can be traced back to faulty mediaeval translation of Varro's name *motacilla* for a wagtail, but in the case of this gull Linnaeus undoubtedly misread his own shorthand for *atricapilla* ("black-headed").

Eponyms are coined after real, fictitious, or mythical people. Their use as specific epithets has always been popular, and the trend is increasing. For example, just over 58 per cent of the new species described in the period 1981–1990 have been so named, and the figure rises to 75 per cent in the two major American journals for the years 1991–1993. The use of personal names in the formation of compound genus group names has long been objectionable, but Prince Charles Bonaparte revelled in such as *Blythipicus*, *Graydidascalus*, *Juliamyia*, *Reinwardtoena*, *Smithiglaux*, and *Thouarsitreron*, to the disgust of more conservative workers. The practice of naming new birds of paradise and other beautiful species after kings and queens was anathema to the Prince's fiercely republican sentiments. In proposing (1850) *respublica* for Wilson's Bird of Paradise *Diphyllodes* he voiced a lack of respect for all the rulers of the world but, at the same time, expressed his disenchantment with the French Republic which he considered had been turned into a hell by the machinations and arrogance of soi-disant republicans. By coining this name he ensured that, since there could not be a paradisean republic, there could at least be a republican [bird of] paradise. In doing so, however, he 'hijacked' the specimen bought and donated by Edward Wilson and destined for the Academy of Natural Sciences, Philadelphia, and the Prince's description was published barely six months before John Cassin's *D. wilsonii* based on the unique specimen. Bonaparte's precipitate action, the enthusiasm of a restless, driven man, was not appreciated by the American scientific community, who refused to use *respublica* for many years thereafter.

Greek mythology has played a significant rôle in nomenclature, and the classics were widely trawled by early naturalists. The generic appellation *Penelope* Merrem 1786 for the Neotropical guans has always seemed arbitrary, although most authors agree that it refers to Penelope, wife of the hero Ulysses. Recent researches have revealed another spelling *Penelophe*, which makes sense (Latin *pene*, almost; Greek *lophos*, crest) and alludes to the fuller crest of the Marail Guan

P. marail. However, Teixeira (1995) suggests that the generic term could be properly derived from Penelope, who spun a braided web to deceive admirers during Ulysses' absence at Troy, in allusion to the reticulated pattern on the breast and foreneck of many guans. Lesson (1828) proposed the specific term *heliosylus* (Greek *helios*, sun; *sulao*, to carry off) for the Forest Bittern *Zonerodius*, giving it the substantive name "Héron Phaëthon". Phaëthon, vainglorious son of Phoebus, importuned his father to drive the chariot of the sun. However, the task proved beyond him and, being unable to control the fiery steeds, the chariot careered from its chosen orbit, causing universal darkness and natural catastrophes. In dire retribution the unfortunate Phaëthon was struck down by a thunderbolt. (The modern teenage joyrider is let off with a caution or undertakes counselling!)

Rules for the formation of eponyms have changed and been flouted over the years, and the apparent orthographical discrepancies which frequently occur have been compounded by the transliteration or spellings of, especially, Russian and Polish surnames, which have never been treated consistently, and current disagreements on the Swedish ö. Sibley and Monroe (1990) pointed out that the current ICZN rule regarding the replacement of the umlaut refers only to words of Germanic origin, and that Swedish eponyms such as *loennbergi* and *sjoestedti* should be spelled *lonnbergi* and *sjostedti*. Tyrberg (pers. comm.) does not agree with this interpretation, arguing that Swedish ö has been transcribed into oe since the Middle Ages, being derived from a mediaeval ligature for o+e, and questioning the need to change transcription rules which have been universally used for centuries.

Aboriginyms or native names have been derived from over thirty modern languages as well as ancient Greek and classical Latin. Naturalists of the calibre of Brian Hodgson, Andrew Smith, and Thomas Horsfield made frequent use of local names, and other authors found treasure trove in the non-Linnaean works of Marcgrave, Azara, the Comte de Buffon, and Levaillant. Earlier works give the etymology of the genus *Ducula* as Latin *dux*, *ducis*, leader, chief. In fact, this is one of Hodgson's Nepalese based names culled from the native "dukul" for the Mountain Imperial Pigeon *D. badia*. Bonaparte enters the fray again with *Chettusia*, his Franco/Italian rendering of a Russian name "keptuschka" for the Sociable Plover *C. gregaria* (an action that affronted Bowdler Sharpe, who pointedly refused to use the Prince's "nonsense-names" or amended them (*Chaetusia*) as he saw fit). In the never-ending quest for the true meaning behind *Oceanodroma castro* Alec Zino (pers. comm.) advises that "roque de castro", the name given to the Madeiran Storm-petrel on the Desertas, means "rock of the castle" in Old Portuguese, but finds it difficult to believe that illiterate fishermen would have invented such a name. He believes the name may be an onomatopoeia from one of the bird's incessant brooding calls, "rrrrrr oquedecastro". A delightful tale from Japanese classical folklore is revealed by *Gorsachius goisagi* for the Japanese Night Heron. The all-powerful Emperor Daigo (fl. 900) ordered a vassal to capture a Black-crowned Night Heron *Nycticorax*. Upon hearing the imperial command the heron submitted itself to capture. The emperor was pleased that the heron had confirmed his omnipotence over nature as well as man, granted it the title "king of the herons" and the position of fifth rank in his court (*go i*, fifth rank; *sagi*, heron), and released it unharmed. The abomination *Gorsachius*, also spelled *Gorsakius*, is Bonaparte's attempted latinization of the specific name.

Toponyms or geographical epithets are still popular specifically (e.g. Chinese Leaf Warbler *Phylloscopus sichuanensis*, Emei Leaf Warbler *Phylloscopus emeiensis* [a nomen nudum in Beaman (1994)]), and certainly prove more useful as specific tags than eponyms, although the early years of descriptive ornithology succeeded in littering nomenclature with unsuitable and erroneous toponyms. Of interest are the Lilac-tailed Parrotlet *Touit batavica*, a Neotropical species probably shipped to Europe through the West Indies, but named after Batavia on Java in the East Indies; the Far Eastern Curlew *Numenius madagascariensis*, which has never occurred in Madagascar, and undoubtedly the victim of a typesetter's error for *macassarensis*; and the Gentoo Penguin *Pygoscelis papua*, based on Sonnerat's outrageous claim that he had seen no less than three species of penguin in New Guinea! The Bluethroat *Luscinia svecica* was discovered by Olof Rudbeck in Lapland in 1695. He was impressed by its beauty, inspired by the male being coloured like the Swedish flag (the yellow in the Swedish flag had a more orange hue in the seventeenth century), and named it *Avis Carolina* after the Swedish king Carl XI. By 1758 the absolute powers of the monarchy had been abolished, and Linnaeus, who normally followed his mentor Rudbeck closely but had strong links with the Hattarna parliamentary faction, doubtless considered *Carolina* to be politically incorrect, and based the name *svecica* on the Swedish flag.

Under the heading taxonym (names concerning relationship and affinity) mention can be made of the use of anagrams (*Nilaus* from *Lanius*, *Dacelo* and *Lacedo* from *Alcedo*, *Delichon* from *Chelidon*), and the combinations of generic and substantive names beloved of French authors in the last century (producing such hybrids as *Phylidonyris*, *Talegalla*, *Jacamaralcyon*, and *Jacamerops*), and not forgetting *Phedina*, a true Bonapartism, combining a misspelled Greek adjective (*phaios*, brown) and part of an Italian substantive name (*rondine*, a swallow). The more prosaic genus *Ninox*, proposed for the Brown Hawk Owl *N. scutulata* by Hodgson in 1837, is a combination of the now synonymized genera *Nisus*, hawk, and *Noctua*, owl.

Habitat names or bionyms were formerly more popular, but not always accurate. Vieillot (1825) named the Lark-quail *Ortyxelos*, "marsh quail" (Greek *ortux*, quail; *helos*, marsh) since, never having seen a live specimen or knowing anything of its habits, he believed, from its long legs and semi-naked thighs, that it was related to the sandpipers Scolopacidae and inhabited marshes. The Yellow-vented Bulbul *Pycnonotus goiavier* was named "Le petit Goiavier" by Sonnerat (1776) because he observed it perching in guava trees near houses in Manila (French *goyavier*, guava tree).

Ergonyms or behavioural names rank low in the statistical scale. Swainson's (1832) genus *Andropadus* (Greek *aner*, *andros*, man; *opados*, follower) was founded on Levaillant's (1802) name "L'Importun" for the Sombre Greenbul *A. importunus*, because it followed hunters and warned other birds and game by its incessant and wearisome calls. Gould's (1839) *Agriornis* (Greek *agrios*, fierce; *ornis*, bird) reflected the savage habits of the Grey-bellied Shrike Tyrant *A. microptera*, which had a reputation amongst the natives of Chile for attacking and killing the young of other birds.

Of minor importance are phagonyms (food or prey names), although such as *Sphecotheres* and the Edible-nest Swiftlet *Aerodramus fuciphagus* mirror fancy rather than fact, and it is now known that, despite their generic appellations, most antbirds (*Myrmeciza*, *Myrmoborus*, *Myrmoderus*, and so on) follow ant armies to feast on the other insects flushed by the advancing swarms rather than on the ants themselves.

Despite the value of voice amongst birds gerynyms (voice names) figure rarely in nomenclature, although aboriginyms are frequently based on onomatopoeia. Many epithets describe the sound of the voice or call itself (Hoopoe *Upupa epops*, Common Cuckoo *Cuculus canorus*, Wattled Guan *Aburria aburri*). More obscure terms may be illustrated by the Chinspot Batis *Batis molitor*, so named for the song of the male being likened to the sound of grinding millstones (Latin *molitor*, miller), and the Ryukyu Robin *Erithacus komadori*, erroneously given a specific epithet based on the Japanese name for the Japanese Robin *Erithacus akahige* whose unmusical song is considered to resemble the neighing of a horse (*koma*, horse; *tori*, bird). *Akahige*, "red beard", is the traditional Japanese name for the black-throated Ryukyu Robin, but there is speculaion that this apparently erroneous name was originally *akai-ke*, "red hair" (Hiraoka Takashi pers. comm.).

Finally, two years ago it was proposed that a new species of vireo, discovered in the Chocó rainforests of Colombia, be named after the company or individual donating the most money towards its conservation and the preservation of its dwindling habitat. It remains to be seen if this strange alliance between worthy cause and market forces sets a precedent for nomenclature in ornithology in the twenty-first century. Perhaps *Vireo icii* will be indexed in a second edition of Sibley & Monroe?

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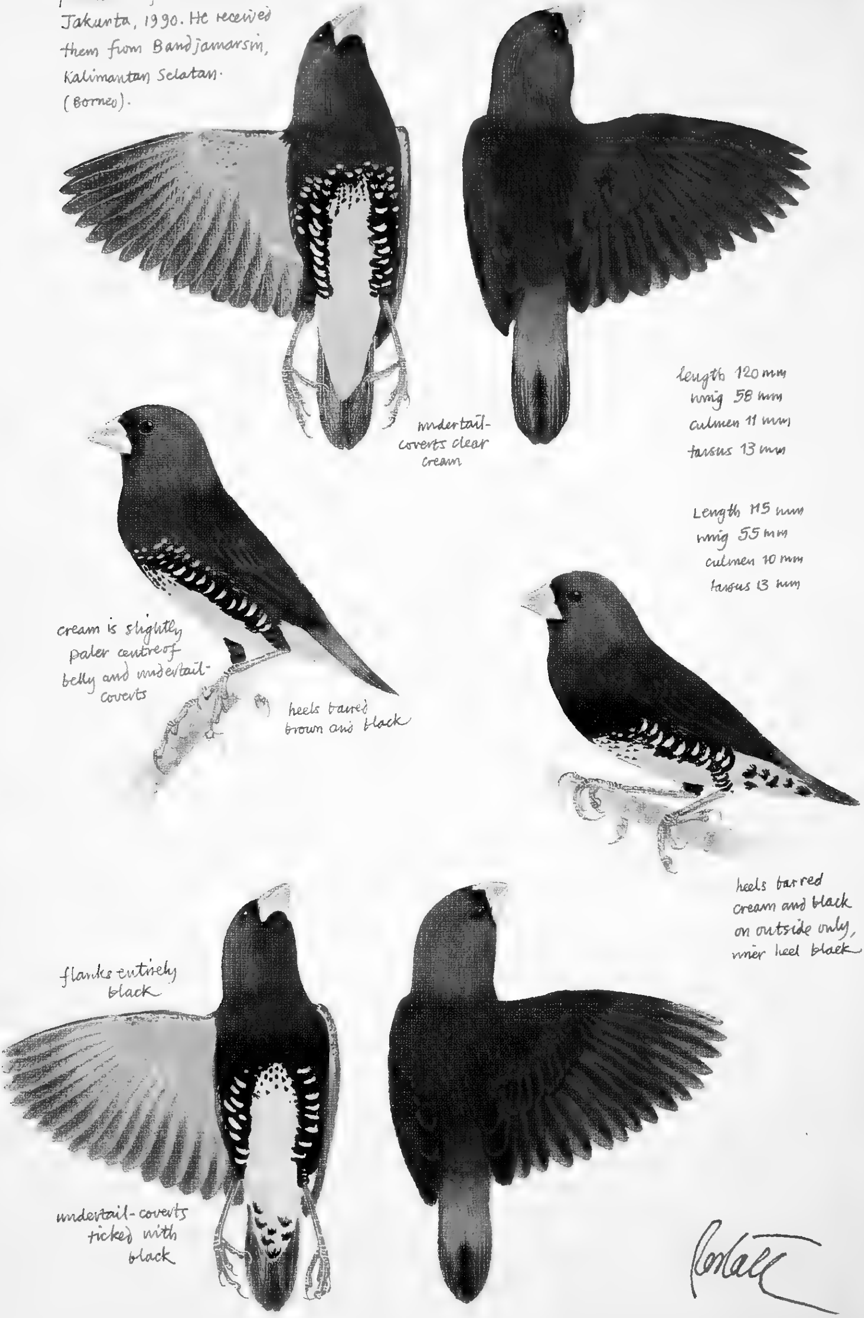
CREAM-BELLIED MUNIA
Lonchura pallidiventer



These two are painted from 5 in the possession of Sani Susanto, Jakarta, 1990. He received them from Bandjamarsin, Kalimantan Selatan. (Borneo).

undertail-coverts clear cream

length 120 mm
wing 58 mm
culmen 11 mm
tarsus 13 mm

Length 115 mm
wing 55 mm
culmen 10 mm
tarsus 13 mm

cream is slightly paler centre of belly and undertail-coverts

heels barred brown and black

heels barred cream and black on outside only, inner heel black

flanks entirely black

undertail-coverts ticked with black

A proposed new species of munia, genus *Lonchura* (Estrildinae)

by R. L. Restall

Received 21 March 1996

There are 39 currently known species that comprise the genus *Lonchura*, accepting *Lemuresthes*, *Heteromunia* and *Padda* as subgenera. This total becomes 40 if one accepts the opinion of Sibley & Monroe (1990) that *L. nigriceps* is not conspecific with *L. bicolor*. Of these, 32 are to be found in Asia. From 1989 to 1995, I lived in Hong Kong and travelled extensively throughout the region in search of munias to observe and study, both in the field and in captivity. In this way I came across several new forms. Some were eventually dismissed as probable hybrids, produced by bird keepers in Europe and imported to Jakarta along with stocks of domesticated Australian estrildines and canaries. Some were described as new subspecies (Restall 1995a). One, the subject of this paper, is described here as a new species:

Lonchura pallidiventer sp. nov.

Holotype. Adult, AMNH 831287, collected by the author in Jakarta, apparently from south-east Kalimantan, Indonesia, 1992.

Syntype. Young adult (incomplete moult from juvenile plumage), AMNH 8311288, similarly acquired.

Description. A rich brown medium-sized munia with a cream belly, white-spotted black flanks, and golden uppertail-coverts.

The adult is 110–120 mm in length; wing-length 53–58 mm. The crown, nape and sides of the head are raw umber or cinnamon. The mantle and wings are Prout's brown (121A in Smithe 1975), the wing-coverts and flight feathers edged with amber. The rump is orange-rufous changing to straw on the uppertail-coverts. The tail is Prout's brown, the feathers edged with straw. The face, forehead, lores, base of mesial and bib are olive-brown. The breast is rich chestnut. When the bird is in calm repose the chestnut breast seems like a clear, well defined cushion, much as it does on the Chestnut-breasted Mannikin *L. castaneothorax*. The flanks, joining in a poorly-defined bar across the breast, are black, with white spots and scallops. The inner flanks, hidden or mostly hidden by the closed wings, are chestnut. The thighs are barred with black and chestnut or black and cream. The underwing-coverts are cream . The belly, ventral region and undertail-coverts are cream. There may be black sub-terminal crescents on the undertail-coverts. The irides are dark brown. The bill is pale violaceous grey. The legs and feet are grey.

Plate 1. Cream-bellied Munias painted from life, May 1990.

Males have a few grizzled lines, produced by black feather edgings, on the upper part of the cream belly, reduced or absent in the female. Females have slight pale barring on the lower rump. The colour plate also shows a difference in the inner flank spotting but this could be coincidental. Males tend to be larger, but not consistently so.

The juvenile is probably similar to the young of other typical munias. The only individual I have seen is a bird that was well advanced in moult into its first adult plumage and I have painted the juvenile based on this. This bird appears to be ground cinnamon to light drab above, a pale pinkish buff on the lower face, throat and breast, and pale buff for the rest of the underparts.

Distribution. From statements of an international bird dealer in Jakarta, and a trader in the Jakarta bird market, it seems that the birds come from somewhere in the hinterland of Banjarmarsin in southeast Kalimantan, Borneo.

Origins of the birds under discussion. I first saw one of these birds in Singapore. It was a single specimen in the collection of Mr Patrick Tay, a businessman who owns a parrot farm and has an interest in munias. He had received the bird in a shipment from Jakarta. A year later, I discovered five individuals in a cage at Wida's Bird Farm in Jakarta. They had been reserved by the owner, Mr Sani Susanto, for his private collection. As he had not seen them before, he would not part with even one. Mr Susanto said they had very definitely come from southeast Kalimantan and had been shipped from Banjamarsin. I also examined some Dusky Munias *L. fuscans* he had received in the same shipment. This was in February 1990. In May I was able to return and brought with me the colour sketches I had made based on notes taken previously, which I then corrected with live birds in the hand (Plate 1). Two of the birds were distinctly larger and bolder than the remaining three and I had painted one of these with one of the smaller birds. This larger bird was a richer chestnut and had plain cream undertail-coverts.

On that visit I was able to obtain two birds that a friend had bought for me in the Jakarta bird market a couple of weeks earlier. The trader was well known to us. He said he had bought them from a man who lived in Banjamarsin and who regularly brought wild birds to sell for pocket money whenever he came over on the boat to Jakarta to visit his family. The two birds were virtually identical. At first I kept them with some White-bellied Munias *L. leucogastra smythiesi*, for comparative purposes, thinking they might be an undescribed subspecies of the White-bellied Munia. In this regard they quickly showed themselves to be quite different in appearance, posture, voice and behaviour. In posture they tend to sit upright, rather than across the perch as White-bellied Munias do. They proved to be females.

In October 1990, a juvenile in emaciated condition, which died within two days, was taken from another of the hand-carried lots from Banjamarsin. Then in April 1991, two more birds turned up in the Jakarta bird market, once again brought by the visitor from Banjamarsin. These turned out to be two males, were in excellent condition and were singing well. Another turned up the following year.

Figure 1. Advertisement song. The bird may bob up and down while bent over like this.

This makes a total of 13 birds of this species that I saw over a period of four years. The surviving three birds in my possession were donated to the Zoological Society of San Diego, and are currently the subject of further study by Dr Baptista of the California Academy of Sciences.

Calls. The contact note, when the birds are together, is *pip* or *chip*, and there are variations of tone from both sexes. The alarm call is a loud *tchek!* When nervous or apprehensive, such as when I am seen watching them through the window, the sentry bird (Restall 1995b) will utter a rapid *tik tik tik tik*, accompanied by tail jerking from side to side and very quick wing-flicking. The male, when calling its mate, utters a *pee*, *peet* or *cheet*, the female's reply is a *pip* or *chip*.

Song and display. In undirected advertisement song (Fig. 1) the male stands at about 45 degrees to the perch, head horizontal, and sings at first a quiet *tik tik tik tik tik tik tik* which changes to more of a *tuk tuk tuk tuk*. This becomes a few long *weeee* whistles, each tending to descend, changes to a long drawn out *weeeeeooooooooo* legato (or long connecting note) first rising then descending, and ends with several *wee wee wee wee* notes. The whole may last from 8 to 15 seconds and may be repeated many times. The legato is sometimes loud and penetrating and may be the only part of the song heard even a short distance away.

When displaying to the female the male is slightly more hunched, with the bill pointing slightly downwards. The nape, bib and upper throat feathers are erected, but the chest feathers are depressed. The rump is ruffled. The flanks and belly feathers are fully erected, clearly displaying the white spots on the black. In high intensity display (Fig.

Figure 2. High intensity, directed song when a female is near by.

2) the bird stands well clear of the perch, with neck stretched and head almost horizontal, moving from side to side as necessary to follow the female. During the performance the bill is opened wide and half closed in regular movements.

I have seen the male take a length of grass, holding it at one end, and jerk his head upwards a couple of times (Fig. 3). On this occasion the female approached but he dropped it and no display followed. On another occasion when a very active nest-building male saw his mate near by he flew to her with a length of paper in his bill and went immediately into display song, dropping the paper as he opened his bill.

There appears to be little loss of the complete straw display as detailed by Baptista & Horblit (1990). The display begins with straw carrying followed by the head jerk, and tail twist. In the absence of any straw carrying, the hunch is perhaps the equivalent of the introductory bow. The inverted curtsey (Morris 1958) is minimal but not completely absent, and the song ends with a bow. I have not seen the tail spread, but the full fluffing of the rump is probably the equivalent.

English name. I suggest Cream-bellied Munia.

Discussion

Considering the apparent origin of the birds, I compared them rather carefully with the White-bellied Munia *L. leucogaster*, which is the only munia in Kalimantan that is in any way similar. This I was able to do very well as I had four *L. leucogaster smythiesi* in the laboratory at the time. The significant differences in appearance are the total lack of any

Figure 3. Straw carrying, before singing. The male will bob up and down while carrying the straw.

striations on the upper surfaces, rich orange lower rump and uppertail-coverts of the new taxon, and the pure cream of the belly and undertail-coverts which is unlike any other munia. In contrast the White-bellied Munia has striated upper parts, a white to pale cream belly, and fuscous or black undertail-coverts.

The presence of the long drawn-out legato in the song structure places it probably within the *Munia* subgenus (which includes the Chestnut Munia *L. atricapilla* and the Great-billed Mannikin *L. grandis*). To my ear, the song is similar in structure to that of the Five-coloured Munia *L. quinticolor*.

From a considerable experience with munias over some 40 years, studying them in field, aviary and laboratory, I have attempted to explain this taxon by hypothesising possible combinations of parentage that might produce a hybrid with the plumage characteristics displayed, but have failed to come up with one, however improbable. The juvenile, albeit in moult, failed to show any of the scalloping on the underparts typical of most munia hybrids. I have also scoured the avicultural press for photographs of munia hybrids, and have been unable to find any reference to a similar form. From the song, display and coloration of these birds, including the all-pale bill, I am inclined to align it with *L. quinticolor* and *L. castaneothorax*.

Acknowledgements

I am indebted to Dr Luis Baptista and Mr Derek Goodwin for their critical readings of the manuscript, and the many comments and advice they gave. The content and conclusions are entirely my own.

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Breeding and longevity in captive Blue-shouldered Robin-Chats *Cossypha cyanocampter*

by Stuart Keith & Nancy Bent

Received 25 July 1995

Carefully documented breeding of captive birds provides a valuable supplement to our knowledge of the behaviour of birds in the wild, and for little-studied species it may be the only such information available. The account by Bent (1985) of the nesting of the Blue-shouldered Robin-Chat *Cossypha cyanocampter* in the Brookfield Zoo near Chicago over several years does much to increase our knowledge of the breeding habits of the species, which were summarized by Keith *et al.* (1992). For full details see Bent's account in *Brookfield Zoo Bison* 2 (1), p. 3; salient points not mentioned in Keith *et al.* are listed below. The editors of *The Birds of Africa* regret that this paper was unknown to them before publication of Volume 4.

The breeding cycle begins with the male singing loudly and displaying to the female. Commonest display involves fluffing up breast and belly feathers, fully exposing their orange-yellow colour, and shivering the wings so that the blue shoulder patches show. Meanwhile the female sings her own softer versions of the songs, and food-begs in the same manner as nestlings, crouching, shivering her wings and making plaintive cheeping noises.

During courtship the female builds the nest. In the zoo she used several sites: a hanging basket provided by the zookeepers, a ledge in a dirt bank, and a bromeliad in a tree. The nest was a simple cup woven of hemp fibres, leaves and grass; some of this material was provided by the keepers.

Incubation is by the female only. Period: 14 days.

Nestlings are covered in rusty orange down. The female removes eggshells from the nest. The young are fed by both parents with baby crickets and mealworms provided by the zoo, supplemented by other insects the parents find for themselves. Young fledge in about 14 days; they continue to be fed by both parents on leaving the next, but the female often starts another nest immediately, in which case the male feeds the young by himself. Young essentially independent at 6 weeks.

Information on longevity in birds is hard to come by, for obvious reasons. In recent years data for Africa have been provided by recapture of ringed birds, e.g. in Gabon (Brosset & Erard 1986), Kenya (Zimmerman 1972, Mann 1985), Malaŵi (Dowsett 1985), Malaŵi and Mozambique (Hanmer 1989), and Zimbabwe (Harwin *et al.* 1994). Before this, captive birds provided almost the only evidence. Keith *et al.* (1992) list a male *Cossypha cyanocampter* still alive and breeding after 24 years in captivity, as reported by Curio (1989). To this may be added a female in the Brookfield Zoo, caught in the wild at an unknown age, which died at a minimum age of 24 years, and a wild-caught male which died there at a minimum age of 19 years. Small passerines are being shown to live a good deal longer than was previously supposed. Keith *et al.* (1992) report a captive Common Bulbul *Pycnonotus barbatus* which lived for 26 years 5 months and a wild bird which lived for 18 years. In urban areas in Zimbabwe, on the other hand, where these bulbuls are taken by cats and other predators, mean life expectancy is only 2.02 years, with a maximum of 9.92 years (Irwin 1981).

The Brookfield Zoo has been very successful in raising *Cossypha cyanocampter*. One pair produced a lifetime total of 12 fledged chicks, another pair 15 chicks. One female continued to breed until about age 20. This demonstrated ability to breed non-seed-eating passerines in captivity is very encouraging when one considers the number of species that may soon come to depend on intervention by man for their survival. *Cossypha cyanocampter* is not at present endangered, although the forests it lives in are at risk, but many other small African thrushes survive in precariously low numbers.

Acknowledgements

We thank Karin Nelson, editor of *The Bison*, for allowing us to use some of the material from Nancy Bent's earlier (1985) paper. Bent also wishes to thank Lucy Greer, Registrar at Brookfield Zoo, for her help in assembling data on the robin-chats, and the Bird Department at Brookfield Zoo for all their efforts at breeding the species.

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New and unusual records of birds in Cameroon

by Uffe Gjøl Sørensen, Jørgen Bech & Erling Krabbe

Received 2 September 1995

During a visit to Cameroon in November–December 1993 seven species new to the country were recorded, including two afrotropical species (Augur Buzzard *Buteo augur*, Fire-bellied Woodpecker *Thripias pyrrhogaster*) and five palaearctic bird species (Imperial Eagle *Aguila heliaca*, Terek Sandpiper *Xenus cinereus*, Broad-billed Sandpiper *Limicola falcinellus*, Isabelline Wheatear *Oenanthe isabellina*, Isabelline Shrike *Lanius isabellinus*). These records, together with a series of range extensions and other notable records, are dealt with in the following.

One week was spent in northern Cameroon with three full days in and around Waza NP (acacia savannah) and 1½ day in Bénoué NP (woodland savanna). The remaining 2½ weeks were spent in southwestern Cameroon with 5 days at Mount Kupé (mountain forest), 7 days in and around Korup NP (lowland rainforest) and three brief visits to the mangrove coast of the Gulf of Guinea (twice at Douala and once south of Korup NP).

A significant part of the notable records are from either the north or the coast. These were the areas where the shortest times were spent, and it seems that only little ornithological work has been done in these areas during the early dry season. Most of the records concern palaearctic winter visitors, which only made up about 15% of the 462 species recorded during the visit. These are species that we are familiar with from extensive field-work in Europe and the Middle East and it seems likely that their occurrence in Cameroon has been overlooked in the past.

The sequence and nomenclature follow Dowsett & Forbes-Watson (1993).

PINK-BACKED PELICAN *Pelecanus rufescens*

20 at La Digue (Douala) on 21 Nov and 24 at the mangroves S of Korup NP on 5 Dec. Louette (1981) gives only March to July as the period of known occurrence of the species on the coast.

WHITE-BACKED NIGHT HERON *Gorsachius leuconotus*

One adult bird seen at dusk flying up the Bénoué River in Bénoué NP on 18 Nov. The species was probably heard at the same place after dusk the following evening. Louette (1981) describes the species as confined to the equatorial forest, and therefore this seems to be the first record from the woodland savanna in Cameroon.

BLACK EGRET *Egretta ardesiaca*

Three seen together in the interior part of the mangrove S of Korup on 5 Dec. This is the first record from the coast of Cameroon. Louette

(1981) describes the species as sparsely distributed in northern Cameroon only. Brown *et al.* (1982) describe it as common along coasts in West Africa, but their distribution map of the species excludes Cameroon.

WESTERN REEF HERON *Egretta gularis*

Seen on all three visits to the coast. At La Digue (Douala) five white-phase birds were seen on 21 Nov, and four white-phase and four dark-phase on 6 Dec; in the mangroves S or Korup NP one white-phase and eight dark-phase birds on 5 Dec. Apparently late records, or perhaps the species can be found all year round. Louette (1981) describes it as a regular bird at the coast during the period March to September only.

YELLOW-BILLED HERON *Egretta intermedia*

One was seen in the mangrove S of Korup NP on 5 Dec, and one at La Digue (Douala) on 6 Dec. The first records from the coast in Cameroon. Louette (1981) reports the species as limited to the inundation area in northern Cameroon. It is known from the West African coast west of Cameroon (Brown *et al.* 1982).

GOLIATH HERON *Ardea goliath*

One observed at Bénoué NP on 19 Nov. Apparently an early record as Louette (1981) describes the species as a dry season visitor from December to March.

HAMERKOP *Scopus umbretta*

One seen at La Digue (Douala) on 21 Nov; one at Mundemba (Korup NP) on 4 Dec, and 26 in the mangrove S of Korup NP on 5 Dec. These observations contradict the statement by Louette (1981) that the species is present on the coast only from January to June and then apparently leaves the country to the west. Rodewald *et al.* (1994) report the species throughout the year from Korup NP.

AFRICAN OPENBILL STORK *Anastomus lamelligerus*

34 at the Bénoué River near Garoua on 11 Nov; three at Waza NP on 16 Nov; eight on Plaine du Tchad north of Waza NP on Nov 17. Louette (1981) mentions the species as a rainy season visitor only in the north, hence these early dry season observations seem to be unusual.

GLOSSY IBIS *Plegadis falcinellus*

Six seen at the Bénoué River at Garoua on 6 Nov; another 15 seen on Plaine du Tchad north of Waza NP on 17 Nov. These records are early, since Louette (1981) reports that the species occurs in the north only from January to April.

NORTHERN PINTAIL *Anas acuta*

One seen between Maroua and Waza on 14 Nov. Robertson (1992) suggests that the record of up to 50 Pintails from Waza in Dec 1990 was the first for Cameroon south of Lake Chad; but in 1987 up to 16,000

Pintails were found on Lake Maga (10°30′N, 15°10′E) east of Waza NP (Monval & Pirot 1989). The species is very numerous at Lake Chad and the scarcity of records is likely to indicate only the lack of recent ornithological activities.

NORTHERN SHOVELER *Anas clypeata*

Four seen in Waza NP on 4 Nov. This is only the third record from Cameroon (Robertson 1992 & *in. litt.*), but being a fairly frequent winter visitor at Lake Chad (Monval & Pirot 1989) the species is likely to be regular in northern Cameroon.

FERRUGINOUS DUCK *Aythya nyroca*

One female seen in Waza NP on 15 Nov. Louette (1981) observed several hundreds in Waza in January 1976, but recent records are likely to be few due to the significant decline in the world population (Monval & Pirot 1989).

EGYPTIAN VULTURE *Neophron percnopterus*

Recorded on two days in Waza NP: ten on 15 Nov and five on 16 Nov. These records, together with those of Thiollay (1978) and Robertson (1992), indicate that the species must be regarded as regular at Waza at least in the dry season.

RÜPPELL'S GRIFFON *Gyps rueppellii*

The species is common in Waza NP and breeds on the cliffs at the park entrance. We also observed two pairs attending nests in tops of Acacia trees, with an apparently brooding bird present in the one of the nests. This may indicate that tree-nesting does occur in this species, although doubted by Brown *et al.* (1982).

WESTERN BANDED SNAKE EAGLE *Circaetus cinerascens*

One seen at Bénoué NP on 20 Nov. The few records from Cameroon are all from the savanna zone (Louette 1981, Robertson 1992).

MARSH HARRIER *Circus aeruginosus*

Two on 15 Nov and four on 16 Nov in Waza NP; seven on Plaine du Tchad north of Waza NP on 17 Nov; and one male between Garoua and Bénoué NP on 18 Nov. Contrary to Louette (1981), Thiollay (1978) found the species to be frequent in the north and Robertson (1992) showed that it is regular over a wide area of Cameroon. Our observations also indicate that it is of regular occurrence in the north.

PALLID HARRIER *Circus macrourus*

One male and one female/immature between Garoua and Maroua on 14 Nov. Single juveniles seen in Waza NP on 15 and 17 Nov. Louette (1981) describes the species as common in the north, but like Thiollay (1978) and Robertson (1992) we found it to be less common than Montagu's Harrier.

MONTAGU'S HARRIER *Circus pygargus*

Six seen (2 males, one melanistic phase) between Mora and Waza on 14 Nov. Up to 20 (mainly males) per day in Waza NP on 15–17 Nov. Like Thiollay (1978) and Robertson (1992) we found this species to be the commonest harrier in northern Cameroon—contrary to Louette (1981).

LONG-LEGGED BUZZARD *Buteo rufinus*

One seen on 15 Nov and another two on 16 Nov in Waza NP, and a single bird between Waza and Maroua on 18 Nov. Louette (1981) knew only the observations by Thiollay (1978) and believed the species to be uncommon in northern Cameroon.

AUGUR BUZZARD *Buteo augur*

An adult female of ssp. *augur* was seen in acacia savanna north of Bénoué NP along the road to Garoua on 20 Nov. This is the first record in Cameroon of this distinctive buzzard from East Africa; the nearest breeding areas of the species (and subspecies) are about 1600 km away in eastern Sudan or northeastern Zaire (Brown *et al.* 1982).

WAHLBERG'S EAGLE *Aquila wahlbergi*

One seen at Mt. Kupé on 23 Nov. Louette (1981) only mentions the species from the savanna zone, but it is known from Mt. Kupé (Chris Bowden pers. comm.)

[**LESSER SPOTTED EAGLE** *Aquila pomarina*]

None seen despite careful check of all *Aquila* eagles in Waza NP and Bénoué NP (in total 15 *A. rapax*, one *A. heliaca* and five *A. wahlbergi*). The lack of records supports the conclusion of Christensen & Sørensen (1989), who question a claimed winter-area for the species in northern Cameroon/southern Chad (Vielliard 1972, Thiollay 1978). If the species did occur in northern Cameroon as a winter visitor its presence was to be expected at the time of our visit in mid-November. The Lesser Spotted Eagle, a transequatorial migrant, passes through the Middle East in late September–early October and arrives in its well documented winter-area in southern Africa in October (Christensen & Sørensen *op. cit.*).

IMPERIAL EAGLE *Aquila heliaca*

An immature seen in Waza NP on 17 Nov. This is the first record for Cameroon, and from sub-Saharan Africa west of Sudan.

AFRICAN HAWK EAGLE *Hieraaetus spilogaster*

Two adults together at Bénoué NP on 20 Nov. There are very few records from Cameroon (Louette 1981, Robertson 1992).

BOOTED EAGLE *Hieraaetus pennatus*

Three (two light-phase, one dark-phase) on 15 Nov and two (both light-phase) on 17 Nov in Waza NP. One light-phase between Waza NP and Maroua on 18 Nov. There are only few previous documented records from Cameroon (Thiollay 1978, Robertson 1992) and they are all from the north around Waza NP, where this species must be regarded as a regular winter visitor.

LESSER KESTREL *Falco naumanni*

A male on Plaine du Tchad north of Waza NP on 17 Nov. Louette (1981) claimed a complete lack of definite records in Cameroon and this led Robertson (1992) to list a record as the second from Cameroon as he knew of one earlier record. In fact Thiollay (1978) had already recorded the species, and estimated that more than 10% of the kestrels recorded during his raptor survey in northern Cameroon belonged to this species (out of a total of 331 birds).

LANNER *Falco biarmicus*

One at Nyasoso (Mt. Kupé) on 22 Nov. Louette (1981) mentions only one record outside the savanna zone. However, Holyoak & Seddon (1990) point out that the species is frequent in the montane region in western Cameroon.

BARBARY FALCON *Falco pelegrinoides*

An adult seen south of Waza on 17 Nov; the second record from Cameroon. Robertson (1992) photographed an adult at Waza on 20 Dec 1990.

AVOCET *Recurvirostra avosetta*

200 seen on a mudflat in the mangroves S of Korup NP on 5 Dec; a high number for Cameroon and an unusual site. The species is not mentioned from the coast of Cameroon in Urban *et al.* (1986); Louette (1981) mentions it as rare in Cameroon with one record on the coast and a few in the north.

ROCK PRATINCOLE *Glareola nuchalis*

Two showing characters of ssp. *nuchalis* seen day-roosting on rocks in the river at Korup NP on 4 Dec. They were seen at close range and showed a well-defined white hindneck-collar without any rufous. The subspecies from western Cameroon is supposed to be *liberiae*, with a chestnut hindneck-collar (Urban *et al.* 1986), but Louette (1981) considered most specimens from western Cameroon to be intermediates, being closest to nominate *nuchalis*.

WHITE-FRONTED PLOVER *Charadrius marginatus*

Two at the Bénoué River in Bénoué NP on 19 Nov. The few inland records in Cameroon are all from the Bénoué plain (Louette 1981, Robertson 1992).

BLACK-TAILED GODWIT *Limosa limosa*

One seen in Waza NP on 16 Nov and a flock of 14 at the Bénoué River at Garoua on 18 Nov. Louette (1981) described the species as common near Lake Chad but otherwise only known from a few records from the coast.

BAR-TAILED GODWIT *Limosa lapponica*

Singles seen at La Digue (Douala) on 21 Nov and 6 Dec. Louette (1981) mentions that there are only few records from Cameroon.

SPOTTED REDSHANK *Tringa erythropus*

One seen on Plaine du Tchad north of Waza on 17 Nov. Few records are known from Cameroon, all from the north (Louette 1981, Robertson 1992).

MARSH SANDPIPER *Tringa stagnatilis*

Two seen at the Bénoué River at Garoua on 18 Nov; one on a mudflat in the mangroves S of Korup NP on 5 Dec. Louette (1981) mentions one specimen from the coast and a few other records elsewhere.

TEREK SANDPIPER *Xenus cinereus*

An adult seen at the Bénoué River at Garoua on 13 Nov; the first record from Cameroon. Urban *et al.* (1986) mention only few previous records from West Africa and they are all from the Sahel zone (Senegambia, Mali, N. Nigeria, Chad).

RUDDY TURNSTONE *Arenaria interpres*

One seen at La Digue (Douala) on 21 Nov. Louette (1981) mentions only one previous record from the coast.

BROAD-BILLED SANDPIPER *Limicola falcinellus*

A juvenile seen on the mudflats at la Digue (Douala) on 21 Nov; the first record from Cameroon and the first from the coast of West Africa. Urban *et al.* (1986) mention four records from the Sahel (two Mali, one Nigeria and one Chad). There is a recent record from the coast of Gabon (Christy 1990).

BLACK-HEADED/SLENDER-BILLED GULL *Larus ridibundus/genei*

One in winter plumage on 6 Dec at La Digue (Douala). The bird was too distant for proper identification to species. There are two records of *L. ridibundus* from Cameroon (Robertson 1993).

GULL-BILLED TERN *Sterna nilotica*

One seen in the mangroves S of Korup NP on 5 Dec. The first record from the coast in Cameroon. Louette (1981) mentions only a few records from northern Cameroon. The species is known from the West African coast west of Cameroon (Urban *et al.* 1986).

ROYAL TERN *Sterna maxima*

300 on 21 Nov and 900 on 6 Dec at La Digue (Douala); 600 in the mangroves S of Korup NP on 5 Dec. The numbers from both localities classify these as of international importance (>500 birds) for the West African population (Rose & Scott 1994). As we only visited a fraction of the mangroves in Cameroon, they are likely to be a very important wintering area for the afrotropical population.

COMMON TERN *Sterna hirundo*

One seen at La Digue (Douala) on 21 Nov. Louette (1981) mentions only records from March to July.

WHISKERED TERN *Chlidonias hybridus*

At the Bénoué River at Garoua the species was seen on all three visits: 90 on 13 Nov, 12 on 18 Nov and 9 on 9 Dec. A single was seen between Garoua and Bénoué NP on 18 Nov. Louette (1981) does not mention records from Cameroon, but there are a few recent observations (Keen 1993).

WHITE-WINGED BLACK TERN *Chlidonias leucopterus*

50 seen at the Bénoué River at Garoua on 13 Nov. Louette (1981) only mentions records from Lake Chad, where the species is very common.

CHESTNUT-BELLIED SANDGROUSE *Pterocles exustus*

Ten on 15 Nov and seven on 14 Nov in Waza NP. Four came to drink from a sandbank in the Bénoué river at Bénoué NP on 19 Nov. Louette (1981) knew only one observation from Cameroon, but Robertson (1992) found the species to be the commonest sandgrouse in Waza NP with up to 200 per day. The record at Bénoué NP represents a major southward extension of the occurrence of the species.

EUROPEAN TURTLE DOVE *Streptopelia turtur*

Two on 15 Nov and 75 on 16 Nov in Waza NP; 100+ at Plaine du Tchad north of Waza on 17 Nov. There are few autumn records of the species from Cameroon; it is undoubtedly under-recorded.

ADAMAWA TURTLE DOVE *Streptopelia hypopyrrha*

Nine at Bénoué NP on 18 Nov, in small flocks along the road during the late afternoon. In Cameroon this restricted-range species is known from the Adamawa plateau and the Bénoué plain, but there are few records (Louette 1981, Robertson 1992).

RED-EYED DOVE *Streptopelia semitorquata*

Singles at the Bénoué River at Garoua and north of Garoua on 13 Nov. Five at 50–55 km north of Garoua on 14 Nov. Louette (1981) mentions only one record from the Bénoué plain.

RED-FRONTED PARROT *Poicephalus gulielmi*

One at Nguti and four near Baro on 28 Nov. Both records are from western Cameroon, where Louette (1981) mentions that the species may be absent. Rodewald *et al.* (1994) report the species as uncommon in Korup NP.

SENEGAL PARROT *Poicephalus senegalus*

One in Waza NP on 16 Nov may be the first record from the Park, where Louette (1981), however, presumed the species to occur.

EUROPEAN CUCKOO *Cuculus canorus*

One at Mt. Kupé on 25 Nov. There are few records from Cameroon (Louette 1981) and this is the first from Mt. Kupé (C. Bowden pers. comm.).

WOODLAND KINGFISHER *Halcyon senegalensis*

One on 18 Nov and two on 19 Nov at Bénoué NP. The records may be a little late, as Louette (1981) states that the species occurs in the north only during the rains (July–October).

BROAD-BILLED ROLLER *Eurystomus glaucurus*

Two on 18 Nov and four on 19 Nov at Bénoué NP. Louette (1981) does not report the species from northern Cameroon outside the rainy season (July–October).

BLACK-AND-WHITE-CASQUED HORNBILL *Ceratogymna subcylindricus*

One between Kumba and Nguti on 27 Nov. Rodewald *et al.* (1994) mention one previous record from western Cameroon.

WILLCOCK'S HONEYGUIDE *Indicator willcocksi*

One between Garoua and Maroua on 14 Nov. Louette (1981) mentions only one previous Cameroonian record of the species in dry woodland in the north.

LITTLE SPOTTED WOODPECKER *Campethera cailliautii*

A female seen in the northern part of Korup NP on 1 Dec, and a male in secondary forest near Baro on 2 Dec. This is the first record for Korup NP, but there are records from the nearby Rumpi Hills (Rodewald *et al.* 1994).

BROWN-EARED WOODPECKER *Campethera caroli*

One seen west of Baro in the northern part of Korup NP on 29 Nov. Louette (1981) had records only east of Mt. Cameroon, but the species is mentioned as rare in the northern part of Korup by Rodewald & Green (1993).

FIRE-BELLIED WOODPECKER *Thripias pyrrhogaster*

In a stand of trees in secondary forest near Baro outside the Korup NP the species was recorded on three days: a male on 28 Nov, two (one male) on 2 Dec and a male on 3 Dec. The records confirm the occurrence of the species in Cameroon. Two old records from Mt. Cameroon of this lowland forest species from West Africa were accepted by Louette (1981) but rejected by Fry *et al.* (1988). Rodewald *et al.* (1994) mention the species as hypothetical in Korup NP. It is interesting to note that we recorded its allospecies, the Yellow-crested Woodpecker *T. xantholophus*, at a nest-hole in the same stand of trees at Baro.

SHORT-TOED LARK *Calandrella brachydactyla*

One bird was seen feeding on bare ground in Waza NP on 17 Nov. This is the second record from Cameroon, the first being a specimen collected at Efulen on 24 October 1926 (Louette 1981). The species is a widespread winter visitor in the northern part of the Sahel zone (Keith *et al.* 1992).

EUROPEAN SAND MARTIN *Riparia riparia*

100 over the Bénoué River at Garoua on 13 Nov; one north of Garoua on 14 Nov; 160 on 15 Nov and 100 on 16 Nov in Waza NP; a single on Plaine du Tchad north of Waza on 17 Nov; and 90 between Garoua and Bénoué NP on 18 Nov. Louette (1981) presumed that this migrant is widespread in Cameroon, but stated that definite records were few.

MOSQUE SWALLOW *Hirundo senegalensis*

Two seen in Waza NP on 16 Nov are apparently the first records in the north of Cameroon. Louette (1981) expected the arid-country subspecies *senegalensis* to be found in the north due to nearby records in both Nigeria and Chad. Another subspecies, *saturatior*, is found from the Adamawa plateau southward (Louette 1981).

AFRICAN ROCK MARTIN *Hirundo fuligula*

Six over a boulder-strewn hill about 25 km N of Maroua on 18 Nov probably represent the first record in northern Cameroon. Louette (1981) expected the species to be found there, but did not know of any records.

WIRE-TAILED SWALLOW *Hirundo smithii*

Four over a dried-out riverbed in Bénoué NP on 19 Nov. This is a northward extension of the known occurrence of the species in Cameroon. Louette (1981) knew of no records north of the Adamawa plateau, but Mahé (1988) mentions the species as common in Bénoué NP in February 1987.

BLACK-HEADED WAGTAIL *Motacilla flava feldegg*

Two individuals of the black-headed race *feldegg* were recorded in Waza NP on 16 Nov. All other Yellow Wagtails recorded (125+) were of the *flava/thunbergi* complex. Louette (1981) does not mention *feldegg* from Cameroon, but it is common in northeastern Nigeria and at Lake Chad (Keith *et al.* 1992), so its occurrence in northern Cameroon is to be expected.

WHITE WAGTAIL *Motacilla alba*

Two in Waza NP on 16 Nov; the third definite record from Waza and Cameroon (Louette 1981).

AFRICAN PIED WAGTAIL *Motacilla aguimp*

Two at a bridge across the Bénoué River in Bénoué NP on 19 Nov. Louette (1981) mentions only one record from the Bénoué Plain.

TREE PIPIT *Anthus trivialis*

Two records from the Bénoué Plain: one seen north of Garoua on 14 Nov and two in Bénoué NP on 19 Nov. Louette (1981) mentioned only records from the Adamawa Plateau but expected the species to turn up elsewhere.

RED-THROATED PIPIT *Anthus cervinus*

Four seen on Plaine due Tchad north of Waza on 17 Nov, and one in Bénoué NP on 19 Nov. There are few previous records in Cameroon (Louette 1981, Robertson 1992), all from the north.

ISABELLINE WHEATEAR *Oenanthe isabellina*

Two seen in Waza NP on 17 Nov represent the first from Cameroon. The species winters in the Sahel zone across Africa (Keith *et al.* 1992) and its occurrence in the extreme north of Cameroon is not unexpected.

RED-BACKED SHRIKE *Lanius collurio*

A female in Waza NP on 15 Nov. Louette (1981) presumed the species to be regular in the north, but the only definite records he mentions are two November specimens.

ISABELLINE SHRIKE *Lanius isabellinus*

One on Plaine du Tchad north of Waza on 17 Nov is apparently the first record from Cameroon. Louette (1981) regarded this as a subspecies of *L. collurio*; the only definite records he mentions are specimens from across the border in Chad, but he presumed it to be regular in Cameroon.

WOODCHAT SHRIKE *Lanius senator*

An adult on Plaine du Tchad north of Waza and one immature in Waza NP, both on 17 Nov. There are few records from Cameroon (Louette 1981), but these records together with those of Robertson (1992) suggest that the species is regular at Waza and probably elsewhere in the north.

MASKED SHRIKE *Lanius nubicus*

In Waza NP one was seen on 15 Nov and two on 16 Nov. Singles were seen on Plaine du Tchad north of Waza on 17 Nov and between Waza and Maroua on 18 Nov. Previously only four records were known from Cameroon (Robertson 1992), all from Waza NP or nearby localities. The species is likely to be regular there.

[**COLLARED FLYCATCHER** *Ficedula albicollis*]

A female-type of a Palaearctic *Ficedula* flycatcher at Bénoué NP on 19 Nov showed characters of the Collared Flycatcher *Ficedula albicollis* (Jonsson 1992). There are no other records of this species from Cameroon, but as the field identification of *Ficedula* species in female-type plumage is notoriously difficult we regard this record as only a 'probable'.

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Geographic variation in sexual dichromatism in birds

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Received 9 October 1995

The tendency for insular bird populations to "lose" bright male plumages, leaving males dull-plumaged and similar to females, is well documented (Bateson 1913, Mayr 1942, Lack 1947), with examples occurring on nearly every major island group supporting an endemic avifauna. This phenomenon has been explained chiefly by one mechanism:

> The loss of sexual dimorphism through feminization of the male plumage seems to develop only in well-isolated and rather small populations . . . It . . . seems to occur only in localities where no other similar species exist, i.e., where a highly specific male plumage is not needed as a biological isolating mechanism between two similar species.
>
> Ernst Mayr (1942)

Later authors have for the most part followed Mayr's lead (e.g. Lack 1947, Sibley 1957, Grant 1965), although some additional explanations (discussed below) have been advanced for specific cases.

A brief review of examples of this phenomenon led me to see that Mayr's explanation does not adequately account for the diversity of situations in which geographic variation in sexual dichromatism occurs. The purpose of this paper, therefore, is to review geographic variation in sexual dichromatism in birds, and to develop potential explanatory hypotheses.

Methods

Examples of geographic variation in sexual dichromatism were assembled from a variety of sources: published accounts including taxonomic treatments, regional works [especially the atlases of speciation in Africa of Hall & Moreau (1970) and Snow (1978)], and the many reports on the results of the Whitney South Sea Expeditions and the Archbold Expeditions; examination of specimens in the Field Museum of Natural History, American Museum of Natural History, U.S. National Museum of Natural History, University of Michigan Museum of Zoology, Louisiana State University Museum of Natural Science, and University of Kansas Natural History Museum; and consultation with knowledgeable ornithologists. The list presented herein is certainly incomplete—my hope is simply that it is a sufficiently large and representative sample that insights into the phenomenon will be possible.

To preserve clarity of patterns, I limited the examples analysed in the present paper to those occurring within biological superspecies (Mayr 1963). Decisions as to what constitutes a superspecies were often somewhat arbitrary; however, borderline cases were excluded. Species exhibiting variation in coloration of one sex *not* in the direction of the coloration of the other sex, including many examples of heterogynism (Hellmayr 1929, Mayr 1963), were excluded because no variation existed in the degree of dichromatism. Examples in which geographic variation in age of attainment of adult plumages caused variation in sexual dichromatism were included only when the variation was extreme, and not simply variation in the proportion of males in subadult plumages.

When possible, the direction of change and the minimum number of evolutionary derivations were inferred based on outgroup comparisons and geographic considerations. If all other members of the species group or genus showed one general pattern of sexual dichromatism and the same pattern was found in some but not all populations of the species of interest, then that pattern was assumed to represent the primitive state. If different populations gained or lost bright coloration on different parts of the body, or if populations showing variation in dichromatism were geographically separated by populations showing the primitive state, then each population was counted as an independent evolutionary derivation.

A set of abbreviations was employed to summarize patterns of variation. Males are listed first, then females. "B" and "D" refer to "bright-plumaged" and "dull-plumaged", respectively, and "+" indicates "brighter-plumaged than". For example, a population with bright males and dull females is B/D; a population with brighter-plumaged females relative to the first is B/D+; one with females identical to bright-plumaged males is B/B; and so on. Descriptions of populations as bright- or dull-plumaged are relative—a "bright" swift is much duller than a "dull" trogon. Also, the abbreviation for a population's dichromatism is dependent on the type of dichromatism found in the remainder of the populations of that superspecies—a sexually monochromatic species with one population in which males are brighter would be D/D; however, a sexually monochromatic species with one population in which females are duller would be B/B.

Results

Examples of geographic variation in sexual dichromatism in 158 species of birds representing 43 families are summarized in the Appendix. Within particular species, multiple derivations of variant populations were common. Several patterns were present: between-population variation was discrete (stepped) in some examples (e.g. *Foudia rubra*, *Petroica multicolor*), and clinal in others (e.g. *Ficedula hypoleuca*, *Molothrus aeneus*, *Dendroica pinus*). Within-population variation was continuous in some species (e.g. *Pyrocephalus rubinus*), and polymorphic in others (e.g. *Terpsiphone mutata*). Both types of within-population variation occurred in different populations of Tourmaline Sunangels *Heliangelus exortis* (Bleiweiss 1985a).

Of the 158 instances of geographic variation in sexual dichromatism, at least 107 involved changes in male plumage brightness (left half of

TABLE 1

Geographic situation and directionality of change in plumage brightness for each sex, based on examples of geographic variation in sexual dichromatism in the Appendix for which directionality could be determined

Geographic situation	Male		Female	
	B→D	D→B	B→D	D→B
Insular	29	7	3	11
Allopatric	12	1	1	1
Allopatric–parapatric	2	0	0	8
Parapatric	4	2	1	5
Parapatric–clinal	1	0	0	2

table in the Appendix), whereas at least 90 examples were of changes in female plumage brightness (right half of table). Hence, variation in the coloration of either sex was about equally likely. However, in species for which the direction of change could be determined, the direction (i.e. bright to dull, dull to bright) was decidedly nonrandom (Table 1). Males were nearly five times more likely to lose bright plumage than to gain it (compared with uniform distribution, $\chi^2=24.9$, df=1, $P<0.05$); females were more than five times more likely to gain bright plumage than to lose it ($\chi^2=15.1$, df=1, $P<0.05$). This significant interaction between sex and directionality of change of coloration ($\chi^2=38.2$, df=1, $P<0.05$) clearly reflected the fact that males of most species are bright-plumaged to begin with, and that females of most species are initially dull-plumaged.

The geographic situation of examples of variation in levels of sexual dichromatism had little bearing on the directionality of change. Although males of island populations were more likely to lose than to gain bright coloration (Table 1), no significant interaction between geographic situation (insular vs. continental) and gain vs. loss of bright coloration in males existed ($\chi^2=0.33$, df=1, $P>0.05$). Hence, males of island populations were not more likely to lose bright coloration than males in other geographic situations.

Species including both resident and migratory populations showed predictable patterns of geographic variation in sexual dichromatism. For example, the northern, migratory populations of the Shiny Cowbird *Molothrus aeneus* are dimorphic, but the southern, resident populations have the sexes alike and females brightly coloured like the northern males; many other examples of this pattern exist (e.g. *Parula americana–P. pitiayumi*, *Dendroica pinus*, *D. graciae–D. adelaidae*, *D. discolor–D. vitellina*, *Icterus cucullatus*, *Agelaius phoeniceus*). The association between permanent residency and bright (male-like) female plumage is striking and consistent in each of these taxa. Moreau (1960) presented evidence for an association between levels of dichromatism and mating system—polygynous species having dull-plumaged females, and monogamous species often having bright-plumaged females.

Discussion

A wide variety of adaptive hypotheses has been used to account for particular examples of geographic variation in sexual dichromatism; others not proposed specifically regarding this phenomenon can be applied to it in an equally valid manner. These ideas include contrasting selection pressures for migratory vs. permanent resident populations (Hamilton 1961), parasite-mediated sexual selection (Hamilton & Zuk 1982), interspecific female mimicry (Røskaft *et al.* 1986), reduced need for species recognition characters in insular populations (Mayr 1942, 1963), reduced need for predator signalling (Baker & Parker 1979), and absence of nutritional elements necessary for bright coloration (Abbott *et al.* 1977). Each of these hypotheses yields a slightly different set of predictions regarding the phenomenon; more than one, of course, may be acting in such a heterogeneous assemblage of species as that treated herein. Several depend critically on the assumption that bright plumage is costly, and that it will be lost in the absence of selection pressures in its favour.

Rather than entering into an overly nebulous discussion of how particular examples might fit the predictions of particular hypotheses, I will take a different direction in the discussion of my results. The genetic basis for plumage dichromatism appears to be quite simple in birds. Experiments by Morgan (1919) on hen-feathered breeds of chickens *Gallus domesticus* indicate that dichromatism in that species is controlled by but two loci which act via hormonal influences. Furthermore, rare variant morphs in populations of several of the species listed in the Appendix may well represent the expression of alleles for characters affecting plumage dichromatism: e.g. *Columba iriditorques*, *Pyrocephalus rubinus*, *Trochocercus cyanomelas–T. nitens*, and *Terpsiphone viridis*. Hence, characters related to sexual dichromatism may often have a simple Mendelian basis, or at least a simple sex-linked Mendelian basis, and different alleles of these genes may often be found segregating in natural populations of birds.

This observation leads me to suggest a possible alternative explanation for many of the occurrences of geographic variation in sexual dichromatism. Genetic drift in small, isolated populations of birds could lead to the loss or fixation of alleles for bright or dull male or female plumages, and could account for many of the odd patterns of variation documented in the Appendix. Inclusion of ideas from models of interactions between genetic drift and Fisherian runaway sexual selection (e.g. Lande 1980, 1981) could explain elevated evolutionary rates and the apparent concentration of examples in polygynous and lekking species. This alternative hypothesis has the advantages of not invoking novel selection pressures, of explaining all directionalities of change in particular geographic situations (e.g. *acquisition* of bright plumage in island populations), and of being able to explain the frequency of examples of this phenomenon in insular situations. Some hypotheses mentioned above may indeed prove to be the correct explanations for the evolution of particular examples of variation in sexual dichromatism; for example, the ideas of Hamilton (1961) and

Moreau (1960) appear to have explanatory power for migrant vs. resident populations of warblers. However, I suggest that the drift hypothesis may be applicable in more situations than the selective mechanisms.

Inspecting the few phylogenetic hypotheses available for groups included in the Appendix, it is clear that sexual dichromatism evolved dynamically in many lineages. For example, comparing sexual dichromatism characters with a recent hypothesis for the evolutionary history of the ducks (Livezey 1991) indicates several lineages in which dichromatic species arose from nondichromatic dull species, lineages in which dichromatism was lost, and indeed the full spectrum of possible changes. These conclusions are clearly preliminary, but the pattern of dynamic evolution of sexual dichromatism is clear. Further explorations of these ideas can be based on this and other phylogenetic hypotheses now available in the scientific literature.

Evolutionary changes in secondary sexual characters such as plumage coloration also may be important in the speciation process. This dimension of the phenomenon of geographic variation in sexual dichromatism is underemphasised in this paper because I limited the list in the Appendix to examples at the superspecies level or lower, that is, before the speciation process is completed by the establishment of sympatry. Populations under sexual selection that gain or lose patches of bright plumage may become reproductively isolated from one another rapidly, thus accelerating the process of formation of biological species in a manner more or less analogous to the mechanisms proposed by Kaneshiro (1980, 1983). Clear examples of secondary contact of D/D populations with B/D source populations include the rock-buntings *Emberiza tahapisi* and *E. socotrana*, and the pardalotes *Pardalotus punctatus* and *P. quadragintus*.

A final comment refers to the likelihood that Mayr's (1942, 1963) species recognition hypothesis would explain a significant number of the occurrences of geographic variation in sexual dichromatism. Many problems and inconsistencies plague it: (1) it can explain neither the *acquisition* of bright, species-specific female plumages in many insular bird species, nor (2) the occurrence of these phenomena in many continental species as well; (3) it invokes the idea of high costs of bright plumage as a reason for its loss in insular populations; (4) it requires that sexual selection for bright and gaudy male plumages not exist, so that relaxed selection for species-recognition characters can lead to loss of bright plumages; and (5) it requires the tenuous assumption that birds need bright and obvious plumage patches to be able to recognize and identify conspecifics. Hence, this hypothesis is unlikely to explain generally the occurrence of geographic variation in sexual dichromatism in birds.

Acknowledgements

I am very grateful to W. Beecher, C. T. Collins, J. Diamond, J. Fitzpatrick, S. M. Goodman, N. Klein, S. M. Lanyon, M. Marin, E. Mayr, C. Staicer, D. E. Willard, G. E. Woolfenden, and especially D. F. Stotz for advice on examples of variation in dichromatism. Thanks to the curators of the collections mentioned in the Methods for access to specimens under their care, and to S. M. Lanyon, R. O. Prum, M. B. Robbins, C. Staicer, D. M. Watson, and especially D. H. Clayton for helpful discussion of various drafts of the manuscript. A special thank you goes to R. M. Salazar S. for support and encouragement during the latter stages of this study.

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APPENDIX

Summary of examples of geographic variation in sexual dichromatism in birds. Parentheses () indicate populations polymorphic for a particular plumage combination. An asterisk * indicates the probable ancestral condition based on outgroup comparisons, where known; numbers indicate minimum numbers of independent derivations of particular plumage combinations; a plus sign + indicates an unknown number greater than one. Ellipses . . . after a species name indicate superspecies; for coloration, B=bright, D=dull, P=parapatric; for geographic situation, I=insular, C=continuous and clinal, and A=allopatric on continent.

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
ANATIDAE							
Chloephaga picta[1]	.	(+)	1	.	.	IC	Delacour 1950
Plectropterus gambensis[2]	.	1	1	.	.	P	Snow 1978
Anas americana . . .	.	.	+	1	.	A	—
A. strepera	.	1	*	.	.	I	Delacour 1954–1964
A. castanea–A. gibberifrons	+	.	+	.	.	AI	Ripley 1942
A. platyrhynchos	7	1	*	.	.	API	Delacour 1954–1964
A. acuta	2	.	*	.	.	I	Delacour 1954–1964
A. clypeata	.	+	*	.	.	A	Snow 1978
ACCIPITRIDAE							
Aviceda subcristata	.	.	1	*	.	I	Mayr 1945
Circus aeruginosus . . .[3]	1	*	1	.	.	AI	Cheke 1987b, Snow 1978
FALCONIDAE							
Falco tinnunculus	.	2	3	1	.	I	Cade 1982
MEGAPODIIDAE							
Megapodius freycinet[4]	*	2	.	.	.	I	Mayr 1938
CRACIDAE							
Crax pauxi-uniformis[5]	(1)	.	*	.	.	A?	Delacour & Amadon 1973
C. rubra . . .[6]	+	+(+)	+	.	+	P	Delacour & Amadon 1973
C. fasciolata	+	.	+	.	.	C	Delacour & Amadon 1973

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
PHASIANIDAE							
Francolinus francolinus . . .	.	.	.	+	+	P	Hall 1963
F. erckelii . . .	.	.	.	2	*	A	Hall 1963
F. bicalcaratus . . .	.	.	.	1	*	P	Hall 1963
Synoicus ypsilophorus[7]	.	+	+	.	.	C	Mayr & Gilliard 1951, Mayr 1935
COLUMBIDAE							
Columba vitiensis	.	+	+	.	.	I	Goodwin 1983, Amadon 1943
C. delegorguei	.	+	+	.	.	C	Goodwin 1983
C. iriditorques–C. malherbii[8]	.	1	*	.	.	I	Amadon 1953
Aplopelia larvata	.	(+)1	1	.	.	CI	Goodwin 1983, Amadon 1943
Gallicolumba stairi–G. beccarii	.	.	+	+	+(+)	I	Goodwin 1983, Amadon 1943
Ptilinopus monachus . . .	.	.	1	.	*	I	Ripley & Birckhead 1942
P. perousii . . .	*	.	1	.	.	I	Ripley & Birckhead 1942
CUCULIDAE							
Chalcites lucidus	.	*	1	.	.	I	Mayr 1932b
Eudynamis scolopacea	+	.	*	.	+	I	Mayr 1944
APODIDAE							
Cypseloides rutilus–C. phelpsi	.	.	.	1	1	A	Meyer de Schauensee & Phelps 1978
TROCHILIDAE							
Florisuga spp.–*Melanotrochilus* spp.	.	.	1	.	1	A	Zimmer 1950
Heliodoxa schreibersii	.	.	.	1	1	P	—
H. branickii–H. gularis[9]	.	.	1	1	.	P?	—
Heliangelus amethysticollis	.	.	+	1	.	P?	—
H. exortis[10]	.	.	.	+(+)	+(+)	C	Bleiweiss 1985a,b
Schistes geoffroyi	.	.	1	1	.	P	—
Heliothryx barroti–H. aurita	.	.	1	1	.	P-A?	—

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
TROGONIDAE							
Pharomachrus spp.	.	+	1	.	.	P-A?	—
ALCEDINIDAE							
Halcyon cinnamomina	+	+	.	.	.	I	Pratt *et al.* 1987
PHOENICULIDAE							
Phoeniculus castaneiceps	+	.	+	.	.	A	Snow 1978
GALBULIDAE							
Galbula albirostris–G. cyanicollis	1	1	.	.	.	P	—
CAPITONIDAE							
Eubucco versicolor . . .	.	.	+	+	.	P	—
Trachyphonus margaritatus . . .	.	.	1	1	.	P	Snow 1978
RAMPHASTIDAE							
Selenidera spp.	.	.	+	.	1	A	—
PICIDAE							
Sphyrapicus varius . . .	.	+	+	.	.	P	Howell 1952
Piculus rivolii	.	1	*	1	.	P-C	—
P. viridis	.	1	*	.	.	A?	Short 1982
FORMICARIIDAE							
Thamnophilus nigrocinereus	.	.	+	+	.	P	—
Sakesphorus canadensis . . .	1	1	+	1	.	P	—
Thamnomanes caesius–T. schistogynus	.	.	1	1	.	P	—
Myrmotherula haematonota . . .	.	1	*	.	.	A	—
Microrhopias quixensis	.	.	+	+	.	P	—
Pyriglena leuconota	.	.	+	+	.	P	Hellmayr 1929
Formicarius colma	.	.	*	.	1	P	—

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
COTINGIDAE							
Rupicola rupicola–R. peruviana	.	.	1	1	.	A	—
PIPRIDAE							
Pipra coronata	.	+	+	.	.	P	—
Chloropipo unicolor	+	.	1	.	.	P-S	—
TYRANNIDAE							
Pyrocephalus rubinus^{11}	(1)	(1)	*	.	.	I,P	Lack 1947
Myiopagis caniceps	(1)	.	1	.	.	A-P	—
ALAUDIDAE							
Eremopteryx verticalis	1	2	+	+	.	A-P	Hall & Moreau 1970
E. leucotis	.	.	.	1	1	P	Hall & Moreau 1970
HIRUNDINIDAE							
Progne modesta	1(1)	.	1	.	.	API	—
CAMPEPHAGIDAE							
Coracina caledonica	.	+	+	.	.	I	Mayr 1955
C. striata	.	+	*	+	.	I	duPont 1971
C. lineata	+	.	+	.	.	I	Mayr 1931
C. tenuirostris	.	.	+	+	.	I	Mayr 1955
Lalage sueurii^{12}	1	.	*	.	.	A	Mayr 1940
L. aurea	+	*	+	+	.	I	Mayr 1941
L. leucopyga	(+)	.	*	.	.	I	Mayr 1941
IRENIDAE							
Aegithina tiphia–A. nigrolutea	+	+	+	.	.	PCI	Marien 1952

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
LANIIDAE							
Dryoscopus cubla . . .	.	.	2	.	2	P	Hall & Moreau 1970
Tchagra cruenta[13]	.	.	.	+	+	PC	Hall & Moreau 1970
Laniarius ferrugineus . . .	.	.	*	1	.	PC	Hall & Moreau 1970
Telophorus multicolor . . .[14]	.	.	+	.	+	P	Moreau & Southern 1958, Hall *et al.* 1966
Lanius cristatus	.	.	.	+	+	AC	Hall & Moreau 1970
VANGIDAE							
Cyanolanius madagascarinus	.	1	*	.	.	I	Benson 1960
TURDINAE							
Saxicola torquata–S. borbonnensis	1	.	*	.	.	I	Hall & Moreau 1970, Cheke 1987 a,b
Oenanthe xanthoprymna . . .	.	.	+	(+)	.	AP	Hall & Moreau 1970, Vaurie 1949
O. lugens	.	+	+(+)	.	.	AP	Hall & Moreau 1970, Vaurie 1949
O. monticola . . .	.	.	1	1	1	AP	Hall & Moreau 1970
Myrmecocichla arnotti	.	.	+	.	1	AP	Hall & Moreau 1970
Thamnolaea cinnamomeiventris	.	.	*	1	.	A	Hall & Moreau 1970
Monticola saxatilis . . .	.	1	*	+	.	AP	Hall & Moreau 1970
ORTHONYCHINAE							
Eupetes castanonotus	.	.	*	1	.	AP	Rand 1940b
POLIOPTILINAE							
Polioptila plumbea	.	.	.	+	+	P	—
SYLVIINAE							
Apalis flavida	*	+	.	.	.	P	Hall & Moreau 1970
A. jacksoni–A. chariessa	.	1	1	.	.	A	Hall & Moreau 1970
A. rufogularis–A. argentea	.	.	+	.	+	P	Hall & Moreau 1970
A. sharpii–A. porphyrolaema	+	1	.	.	.	A	Hall & Moreau 1970
Bathmocercus cerviniventris . . .	.	1	1	1	.	A	Hall & Moreau 1970
Hyliota flavigaster . . .	.	.	1	1	1	P	Hall & Moreau 1970

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
MALURINAE							
Malurus lamberti	.	.	1	1	.	PC	Schodde 1982
M. alboscapulatus	.	.	*	2	3	AP	Schodde 1982
MUSCICAPINAE							
Ficedula hypoleuca	+	+	+	.	.	C	Røskaft *et al.* 1986
Niltava poliogenys[15]	1	1	.	.	.	P?	—
Petroica multicolor	3	.	*	.	2	I	Mayr 1934, 1942
P. cucullata–P. vittata	1	.	*	.	.	I	Keast 1961
PLATYSTEIRINAE							
Batis capensis . . .	.	1	2	1	1	AP	Hall & Moreau 1970
B. molitor–B. minima	.	.	*	1	.	P	Hall & Moreau 1970
Platysteira cyanea . . .	.	.	1	2	1	P	Hall & Moreau 1970
MONARCHINAE							
Trochocercus cyanomelas–T. nitens[16]	.	1	1	.	.	P	Hall & Moreau 1970
Terpsiphone viridis[17]	.	+	+	.	.	P	Chapin 1948
T. rufocinerea	1	1	1	.	.	P	Chapin 1948
T. mutata–T. bourbonnensis	(+)	.	*	.	.	I	Cheke 1987a,b
T. rufiventer[18]	2	2	2	.	.	PI	Chapin 1948
Chasiempis sandwichensis	.	.	.	+	+	AP	Pratt 1980
Pomarea spp.[19]	.	+	+	+	+	I	Murphy 1938
Clytorhynchus vitiensis–C. nigrogularis	1	.	1	.	.	I	Pratt *et al.* 1987
Monarcha castaneiventris . . .	.	.	.	1	+	I	Mayr 1945
PACHYCEPHALINAE							
Pachycephala pectoralis . . .	2	2+	*	2+	1	I	Galbraith 1956
DAPHOENOSITTINAE							
Neositta papuensis[20]	.	+	+	.	.	A?	Rand 1940a

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
DICAEIDAE							
Melanocharis spp.	2	.	*	.	.	P	Salomonsen 1960a, Mayr & Amadon 1947
Dicaeum hypoleucum	*	1	.	.	.	P	Salomonsen 1960b
D. aeneum–D. tristrami	1	.	*	.	.	I	Salomonsen 1960b
NECTARINIIDAE							
Anthreptes collaris	.	.	1	1	.	P	Hall & Moreau 1970
A. rectirostris	.	1	1	.	.	AP	Hall & Moreau 1970
A. longuemarei . . .	1	.	+	+	.	P	Hall & Moreau 1970
Nectarinia bifasciata	.	(1)	1	.	.	P	Hall & Moreau 1970
N. olivacea	+	+	+	.	.	PC	Hall & Moreau 1970
N. verticalis	.	.	+	+	.	P	Hall & Moreau 1970
N. reichenbachii	.	.	+	.	*	I	Hall & Moreau 1970
MELIPHAGIDAE							
Myzomela cardinalis	.	1	1	.	.	I	Mayr 1932a
M. nigrita	+	+	.	.	.	I	Mayr 1932a
EMBERIZINAE							
Sicalis olivascens	.	.	+	+	.	P	Meyer de Schauensee 1970
Sporophila bouvreuil	.	1	+	.	.	P	—
Loxigilla violacea–L. portoricensis	.	.	*	1	.	I	Bateson 1913
L. noctis	1	.	*	.	.	I	Bond 1980
Certhidea olivacea	*	.	(1)	.	.	I	Grant 1986
Pipilo erythrophthalmus	.	.	+	+	+	C	—
Arremon taciturnus	.	.	+	+	+	P	—
THRAUPINAE							
Creurgops verticalis–C. dentata	1	1	.	.	.	A	Meyer de Schauensee 1970
Habia spp.	.	.	*	1	.	P	—
Spindalis zena	.	.	*	+	.	I	—
Euphonia musica	.	1	*	.	.	I	Bateson 1913

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
PARULIDAE							
Parula americana–P. pitiayumi	.	.	.	1	1	A	—
Dendroica pinus	.	.	.	1	1	C	—
D. graciae–D. adelaidae	.	.	.	+	1	IC	—
D. discolor–D. vitellina	.	.	.	1	1	I	—
DREPANIDIDAE							
Loxops maculata	2	3	1	.	.	I	Amadon 1950
L. coccinea	.	1	*	.	.	I	Amadon 1950
ICTERIDAE							
Icterus cucullatus	.	.	+	1	.	AP	Hamilton 1961
Quiscalus niger–Q. lugubris	.	.	+	+	+	I	—
Agelaius phoeniceus	.	.	+	1	.	I	—
A. cyanopus	.	.	+	1(1)	.	A	—
Molothrus aeneus	.	.	+	+	+	C	—
CARDUELINAE							
Serinus citrinelloides	.	+	+	+	.	AP	Hall & Moreau 1970
S. donaldsoni	.	.	1	1	.	P	Hall & Moreau 1970
Acanthis cannabina	1	*	1	.	.	A	Hall & Moreau 1970
Loxia curvirostra	+	+	+	.	.	C	Griscom 1937
Pyrrhula pyrrhula	2	.	*	.	.	I,P	Vaurie 1956
ESTRILDIDAE							
Uraeginthus angolensis	.	.	.	+	+	P	Goodwin 1982
Estrilda melanotis	1	.	2	.	.	A	Goodwin 1982
PLOCEIDAE							
Ploceus xanthops–P. subaureus[21]	.	.	1	.	1	P	Hall & Moreau 1970
P. baglafecht . . .	1	1	.	.	.	P	Hall & Moreau 1970, Moreau 1960
Malimbus scutatus–M. cassini	.	.	1	1	.	P	Hall & Moreau 1970
M. erythrogaster–M. ibadanensis[22]	.	1	*	.	.	A	Hall & Moreau 1970
Foudia rubra	2	.	*	.	.	I	Cheke 1987a

Continued

APPENDIX continued

Taxon	D/D	D+/D	B/D	B/D+	B/B	Geogr.	Ref.
STURNIDAE							
Cinnyricinclus leucogaster	.	.	*	.	+	P	Hall & Moreau 1970
CRACTICIDAE							
Gymnorhina tibicen	.	+	+	+	.	P	Amadon 1951
PTILONORHYNCHIDAE							
Amblyornis spp.	1	.	*	.	.	A	Cooper & Forshaw 1977, Gilliard 1969, Mayr & Jennings 1952
Chlamydera spp.	2	.	1	1	+	AIC	Cooper & Forshaw 1977, Gilliard 1969, Mayr & Jennings 1952

1. Insular form is B/D; mainland form in polymorphic B/D (D+/D). **2.** Different characters make up the "male" character in the two populations. **3.** Insular population is more dimorphic than those of mainland; allopatric population is D/D. **4.** One of the D+/D populations is apparently a hybrid population between two differentiated D/D populations; each sex of the hybrid population apparently resembling a different parental population. **5.** Evidence indicates a decline of the dull-female morph over the past 100 years, especially in regions where hunting pressure is strong. **6.** Three characters vary apparently independently, with extremely complex geographic patterns. **7.** Less dimorphic forms occur at higher elevations and at higher latitudes. **8.** Populations of *C. iriditorques* on the coast adjacent to island show a rare dull-male morph like the plumage of *C. malherbii*. **9.** Females appear to be variable in resemblance to males. **10.** Some populations have polymorphic bright and dull females; others have continuous variation in brightness of females. **11.** Individuals of both sexes of the coastal Peruvian race *obscurus* occasionally show a uniform grey plumage. **12.** Males in one set of populations have a dull, off-season plumage present neither in other populations of the species, nor in other species of *Lalage*. **13.** Sexes reversed, actually D+/B→B/B. **14.** Dauntingly complex variation among sexes, across geography, and among individuals makes interpretation difficult. **15.** Two plumage characters vary independently, one clinally D/D→B/D+, the other discretely (non-clinally) B/D→B/B. **16.** This species is a D/D member of an otherwise B/D genus. **17.** FMNH 197744, apparently a female, has an iridescent throat like male, though this species is normally dull-female. **18.** Males very polymorphic; extremely complex patterns of variation. **19.** Very complex and striking variation; sexes appear to vary independently. **20.** Some populations appear to have the female brighter than male in the geographically variable character. **21.** Female dull in nonbreeding plumage only in B/D population. **22.** Both sexes show combination of bright colours—*M. ibadanensis* less dichromatic, but difficult to decide which sex is brighter.

Notes on the breeding of the Crested Jay *Platylophus galericulatus*

by S. (Bas) van Balen & Vincent Nijman

Received 18 September 1995

On 15 June 1995, whilst surveying the northwestern slopes of Mt Lumping (7°07′S, 109°38′E; Dieng Mts, Central Java), the authors found a nest (see Fig. 1) that at first sight looked like a pigeon's. The nest was *c.* 2 m up in a thinly branched 4–5 m tall *simbukan* tree (15 cm d.b.h.), and lay on a thin branch at *c.* 60 cm from the main stem. It consisted of a coarse lower layer of twigs, and was lined copiously and neatly with fine, brown and curly strips of fern fronds which were not mixed with the lower layer, but formed a sturdy shallow cup on top of it. The greatest length of the nest was 60 cm (including some protruding twigs), the more compact part being 18 × 18 cm; height of nest 7 cm with inner diameter of the nest cup 6 cm and depth 3 cm.

The nest contained one egg, dirty white, with sparse, coarse red-brown spots, especially on the blunt end; length 30.2 mm, width 22.8 mm, fresh weight 7.9 g, volume 7.8 cc. The egg was identified as

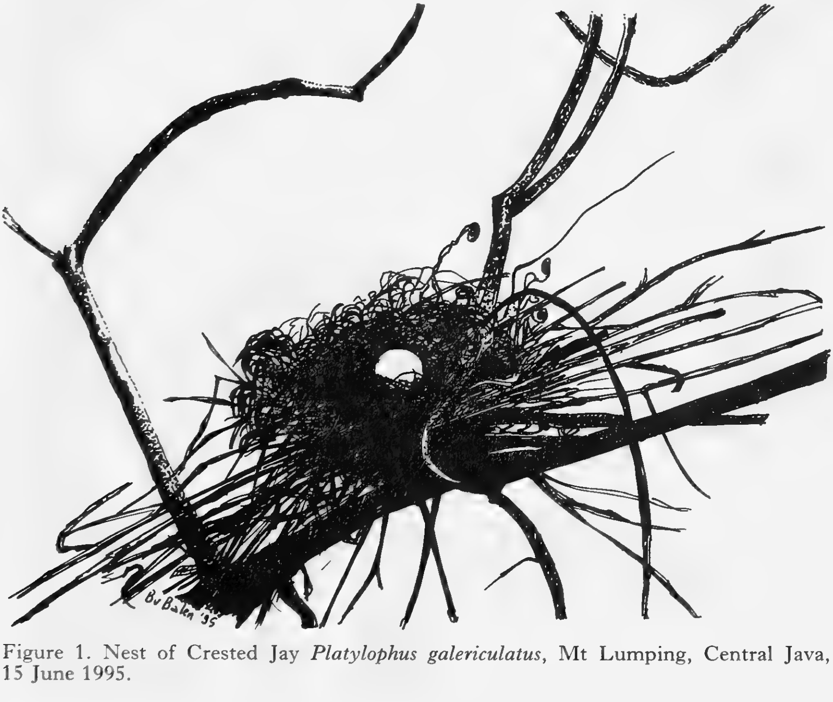

Figure 1. Nest of Crested Jay *Platylophus galericulatus*, Mt Lumping, Central Java, 15 June 1995.

that of the Crested Jay *Platylophus galericulatus* (using Hoogerwerf 1949 as a reference) and has been deposited with the Zoological Museum of Bogor (MZB Nr 1047).

The nest tree stood on a rather steep (40–45°) west slope, at an altitude of 950 m, *c.* 100 m from a small river. In the surrounding habitat were many large trees, with a rather sparse middle storey. Crested Jays were rather common in the area and distant calls of this species were heard when the nest was discovered.

The Crested Jay is a widespread inhabitant of primary lowland forest throughout Java, and is mainly found in pairs at 0–600 m, occasionally up to 1000 m (Bartels 1936; SvB pers. obs.). Madge & Burn (1994) reported that the nest is said to be jay-like but that otherwise the breeding of the Crested Jay is essentially unknown. The latter may be true for the other parts of its range (Thailand, Peninsular Malaysia, Sumatra and Borneo), but there is some literature available on its nesting in West Java, of which a brief summary follows.

The first single egg reported in literature was found in October 1928 by van Steenis on Gunung Paniisan (Mt Salak, West Java) at 500 m asl (Hidma & Hoogerwerf 1935). The nest was sited on the main nerve of a robust fern frond; egg light blue-green with rufous brown spots, becoming dense near the blunt end and thus forming a broad circle. Hoogerwerf (1949) and Hellebrekers & Hoogerwerf (1967) describe in great detail this single egg; they also report two clutches of one and two eggs, collected respectively in January and December by Bartels on Mt Masigit (West Java). MacKinnon (1988) reported breeding in October, with two white eggs, blotched with purple and brown, laid in a solid twig nest.

Acknowledgements

The authors are grateful to Messrs Cahyono and Madi, for their assistance and guidance in the field, and to Mr Darjono (Museum Zoologi Bogor) for helping with the measurements of the egg.

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New departmental records for Dpto. La Paz, Bolivia, from the Pampas del Heath

by Nick A. Helme

Received 4 October 1995

The Bolivian Pampas del Heath is a large (about 300 km^2), humid savanna and grassland in northern La Paz Department, located to the south of the Rio Madre de Dios, east of the Rio Heath, and west of the Rio Asunta. The grasslands fall largely within the boundaries of the recently declared 1.89 m hectare Madidi National Park, which is an extremely well preserved example of the transition from Andean crest to western Amazonian habitats. The Pampas del Heath is a very rare example of an essentially pristine large savanna—never grazed by cattle, and with no permanent human settlements, or history thereof. Its inclusion within Madidi National Park is thus a major step forward in the conservation of Neotropical grasslands and savannas.

Up until now there has been no scientific survey of any aspect of the Bolivian Pampas del Heath, although the much smaller Peruvian equivalent is better known (Denevan 1980, Parker & Bailey 1991, and references to unpublished data therein, Foster *et al.* 1994). As part of our ongoing programme to document the biodiversity of northern Bolivia, TREX (Foundation for Tropical Research and Exploration) undertook a preliminary survey of these unknown grasslands between 20 July and 6 August 1995. Our focus was a rapid conservation assessment of the area, looking at plants, reptiles and amphibians, and selected insect groups (Helme *et al.* in prep.).

Our study site coordinates were approximately 13°01′ S, 68°49′ W, with a mean altitude of 200 m. During our three weeks of fieldwork, two cold fronts (*surazos*) passed through, on each occasion producing about 50 mm of rain, temporarily flooding large parts of the grasslands. The grasslands are entirely surrounded by lowland tall forest, and are a complex mosaic of seasonally inundated grasslands dominated by grasses (especially *Leptocoryphium lanatum*) and sedges, raised termite mounds that harbour various shrub communities (particularly species of Melastomataceae), forest islands with species such as *Vismia* spp., *Xylopia* sp., various Rubiaceae, *Graffenriedia limbata*, and *Maprounea guianensis*, and mauritiales (permanently wet palm swamps dominated by the large palm *Mauritia flexuosa*).

Although birds were not the focus of this expedition, I noted the five following species , which are new records for La Paz Department (*sensu* Angel *et al.* 1995):

PLUMBEOUS IBIS *Theristicus caerulescens*

A pair seen foraging in flooded grassland on two consecutive days (27–28 July).

YELLOW-HEADED CARACARA *Milvago chimachima*

A pair seen once, flying southeast over open grassland (22 July).

GIANT SNIPE *Gallinago undulata*

An individual of this exceptionally large, rufous-rumped snipe flushed from flooded grassland (29 July). The bird flew off low and silent, in a straight line, for about 200 m before settling. This is ideal habitat for this lowland, wet grassland snipe, but is only the second record for Bolivia, the first being a recent record from Noel Kempff National Park in northeastern Santa Cruz Department (Meyer 1995). A new addition to Remsen & Parker's (1995) list of expected species.

SWALLOW-TAILED HUMMINGBIRD *Eupetomena macroura*

Locally common where there were sufficient plants in flower, throughout the forest islands and larger shrub patches. Regularly seen visiting *Vochysia mapirensis* trees in late evening (23–29 July), sometimes in aggressive groups of 2–4 males, who actively chased each other in the vicinity of the trees.

GREY MONJITA *Xolmis cinerea*

One of the commonest birds in open grassland and grassland with termite mounds (20 July–6 August).

Various species were recorded that are not new records for the Department, but that appear in Remsen & Parker (1995) as "Expected" within the Madidi National Park. These are thus new records for the Park, and are noted below:

MAGUARI STORK *Ciconia maguari*

Four individuals seen on the Bolivian bank of the Rio Heath (20 July).

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*

Single bird perched on forest margin tree (28 July).

LONG-WINGED HARRIER *Circus buffoni*

One adult seen quartering over grassland (22 July).

SHORT-TAILED HAWK *Buteo brachyurus*

A single adult seen flying south at about 100 m over the grasslands (23 July).

COMMON POTOO *Nyctibus griseus*

Heard at night along grassland edge, throughout the study period.

TOCO TOUCAN *Rhamphastos toco*

Seen irregularly throughout the study period in tall riverine forest along the Rio Heath.

POINT-TAILED PALMCREEPER *Berlepschia rikeri*

This characteristic resident of *Mauritia* palm swamps was heard regularly and occasionally seen in the abundant suitable habitat in the centre of the Pampas del Heath (21 July–2 August).

FORK-TAILED FLYCATCHER *Tyrannus savana*

Single birds seen in recently burned grassland (28 July).

WEDGE-TAILED GRASS-FINCH *Emberizoides herbicola*

Common in the grasslands throughout the study period.

A further species of interest is the second Bolivian record of Olive-striped Flycatcher *Mionectes olivaceus*. We obtained a specimen of this bird (25 July, now lodged in Colección Boliviana de Fauna, La Paz) in the riverine forest along the Rio Heath, and later regularly observed the species in similar habitat.

These very preliminary observations hint at the need for further work in the area, especially in the light of Remsen & Parker (1995), who suggest that over 1100 species of bird could theoretically be recorded from within the boundaries of Madidi National Park—more than 600 of these are still to be recorded.

Acknowledgements

We thank the Overseas Development Agency (via the British Embassy in La Paz) for funding this year's work, in addition to our in-kind donors LowePro, Mountainsmith, Pur, Teva, Pelican Products, and Mountain Safety Research. Dr. Charles Munn provided useful background information prior to the expedition. An anonymous reviewer provided useful criticism of the draft.

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Polygyny in the Seychelles Sunbird *Nectarinia dussumieri*

by Robert S. Lucking

Received 11 October 1995

The Seychelles Sunbird *Nectarinia dussumieri*, despite being the most numerous and widely distributed of the endemic landbirds of the Seychelles islands, was until recently absent as a breeding species from Aride Island, the northernmost of the granitic islands of the Seychelles archipelago. It is uncertain when the Seychelles Sunbird became extinct on Aride or even whether Aride ever had a breeding population of the species. Oustalet (1878) (cited in Greig-Smith 1980) recorded the species on Aride, and Vesey-Fitzgerald (1936) mentioned sunbirds on Aride although he made no reference to breeding. However, Diamond & Feare (1980) suggested that Aride had never been colonised by the Seychelles Sunbird since no specimens had ever been traced from the locality. Greig-Smith (1980) implied that sunbirds had been present on Aride sometime during the late 1970s although Proctor & Feare (1972) could not find the species on a visit in 1972. Warman & Todd (1984) stated that the Seychelles Sunbird had become extinct on Aride this century. Most historical evidence, therefore, suggests that Aride did hold a breeding population of the Seychelles Sunbird.

In recent years, small numbers of sunbirds have been present on Aride since at least 1987 (I. Bullock unpubl.), including one female originally ringed on Cousin Island 20 km to the south of Aride (J. Komdeur pers. comm.). The first successful breeding attempt for at least twenty years was not recorded until October 1992 (C. Taylor unpubl.). A programme to monitor the development of the population was started in November 1993 and continued until November 1994 when the author left the island.

Greig-Smith (1980) and Owen & Bresson (1987) state that the Seychelles Sunbird is a territorial species, each breeding pair defending a small area within which nesting and most foraging takes place. On Aride, a ringing programme in which birds were ringed using a unique two-colour ring combination on one leg and a numbered alloy ring on the other enabled territory boundaries to be mapped and allowed the movements of individual birds to be followed. By the end of the study, 75% (12) of the estimated population (16) was ringed. The immediate vicinity of the nest-site was found to be the part of the territory most vigorously defended by both sexes against other sunbirds, and it was found that in most cases the feeding ranges of territorial birds overlapped. It is therefore probably best to say that on Aride, at least, Seychelles Sunbird pairs have non-exclusive home ranges within which a small territory is defended. It was also found that female sunbirds showed remarkable nest-site fidelity, so that the location of the small territory within the home range probably remains largely static. The study methods involved mapping the distribution of individual sunbirds to determine home ranges, locating nesting territories within each home range and recording incubation and chick provisioning rates. At the beginning of the study, most sunbird activity took place on the small (7 ha) coastal plateau, and it was determined that there were three home ranges on the plateau each holding a breeding female. Initially only two of the breeding females were ringed and two males. One male and one female were unringed, but all three nesting territories contained at least one ringed individual.

After following breeding cycles in all three nesting territories, it was found that one of the ringed males was paired with the two ringed females in adjacent home ranges. In one nesting territory, the male was seen regularly feeding an unfledged chick, and in the other the same male was seen defending the nest in which the second female was incubating. The two nest-sites were 75 m apart. The second ringed male was monogamously paired with the unringed female, and the unringed male was without a mate. As the study period progressed, sunbirds started to colonise Aride's hill woodland. In November 1994, nesting was discovered in the hill woodland, where the previously monogamous ringed male from the plateau was paired with a second female. This male's two nesting territories were approximately 300 m apart and the male was seen regularly defending both territories. In one case, the male was seen feeding an unfledged chick in the hill territory and within 30 minutes was seen defending his plateau territory.

Male Seychelles Sunbirds typically play little role in the breeding cycle. Incubation is carried out solely by the female, as is the majority of chick feeding (Greig-Smith 1980). On Aride, the two polygynous male sunbirds delivered 16% ($n=111$) of the food items fed to their unfledged chicks. Monogamous males were not seen taking part in chick provisioning. The two polygynous birds between them fathered 70% ($n=10$) of the chicks that fledged over the study period.

Despite two intensive studies (Greig-Smith 1980, Owen & Bresson 1987), polygyny has not previously been documented in Seychelles Sunbird populations.

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A new taxon of small shearwater from the Indian Ocean

by Hadoram Shirihai & David A. Christie

Received 8 July 1995

The Aldabran population of small shearwater *Puffinus*, hitherto assigned to Audubon's Shearwater *P. lherminieri* (but see Shirihai *et al.* 1995, and discussion below), is one of the least-known tubenoses in the Indian Ocean as regards its taxonomy, biology and abundance (Diamond 1994, Stoddart 1984; Dr R. P. Prŷs-Jones pers. comm.), having been discovered only very recently by A. W. Diamond in 1967–68 (Diamond 1971). All populations of supposed Audubon's Shearwaters in the western Indian (and sometimes other) Ocean(s) had been included in *P. l. bailloni* (Bonaparte 1857, Godman 1907–10, Murphy 1927), until Jouanin (1970) placed all the forms with brown undertail-coverts under *P. l. nicolae* and those with white undertail-coverts from the Mascarene Islands (also the locality of Bonaparte's type specimen) under *bailloni*. The type specimen of *bailloni*, however, has apparently long been missing (see also discussion below).

During study in the Natural History Museum, Tring, in connection with the newly described *P. atrodorsalis* by P. R. Colston and HS (see Shirihai *et al.* 1995), we noted that the Aldabran small-shearwater population is in fact identical to that of the Mascarenes, including Réunion (*bailloni*), in general size, bill proportions and several aspects of plumage coloration and pattern. Moreover, in these respects the two differ rather strongly from all other populations in the western Indian Ocean (mainly Seychelles birds) and all other oceans, but differ from each other in hardly any way other than the colour of the undertail-coverts.

We therefore consider that this distinctive Aldabran population represents a separate taxon, for which we propose the name

Puffinus lherminieri colstoni subsp. nov.

Holotype. ♂, Gionnet, Aldabra, 31 January 1968. Royal Society Expedition; A. W. Diamond coll. Specimen in Natural History Museum, Tring, No. 1968-43-87.

Description of type. Generally a uniform very dark blackish-brown dorsally, but feather tips of mantle, scapulars and median and lesser upperwing-coverts very indistinctly browner (each feather with concealed grey basal area, and exposed black subterminal area and slightly browner tip). This same colour on head extends well below eye and covers much of ear-coverts, and is also well demarcated from the pure white throat. The rest of the underparts are pure white, except for obvious large mottled patches on neck and chest sides (created by white tips and dark subterminal areas on feathers running down neck sides) and a lateral extension of dark feathering from rump to 'thighs'. The dark undertail-coverts are formed by uniformly dark brown feathers (mainly the long ones) and mixed/partially brown feathers (mainly the small ones). Tail feathers uniform dark sooty-brown. The underwing-coverts are white, and rather broadly framed by a blackish-brown leading edge and mostly dusky-grey to blackish remiges; the basal inner webs of the greater primary coverts are brown (probably creating a mottled carpal region), and there is also some brownish colour on two central greater coverts and brown on some axillary feathers.

Bare parts. Bill proportionately long, but mainly deep and typically broad, with well-developed nasal tubes and maxillary unguis; generally black, with gape fleshy-coloured (from skin label). Legs mostly flesh-coloured with dark outer side, and with dark outer half and underside of feet (from skin label).

Measurements of holotype (mm). Wing 201; tail 77; bill (to skull) 35.7, (to feathering) 28.3; bill depth (at point below tubes) 7.5, (at top of unguis region) 7.5; tarsus 41.9.

Etymology. We have chosen to name this subspecies after Peter R. Colston, as a mark of our respect on his retirement from the Natural History Museum, Tring. We wish to emphasise our appreciation of his taxonomic knowledge and our gratitude for the invaluable help he has given both to us and to many others over many years.

Relationships and recognition. The form *colstoni* is very similar to *bailloni* (from the Mascarenes) in general size (wing, tail and bill lengths), and shares with the latter form the characteristic markedly robust, bulbous (almost *Pterodroma*-like) bill with well-developed nasal tubes and maxillary unguis (see Fig. 1); both also exhibit typically deep sooty blackish-brown upperparts and a rather well-defined bold dark subterminal area on the individual feathers of the pectoral patches (a dark tract of feathering running down the neck sides), these patches being more extensive than on populations of other regions. The two also have the longest middle toe (see table in Jouanin 1970), measuring 40–46 mm, against 36.5–42 mm in Seychelles area and Maldives (see also discussion below). They differ markedly from each other, however, in that *colstoni* has mainly brown undertail-coverts, these being diagnostically mainly white on *bailloni*, and also shows a greater penetration of the pectoral patches (the area of white on the central chest between the two patches measures 15–24 mm on *colstoni*, against 26–36 mm on *bailloni*). There are some subtle differences in wing and bill lengths, *colstoni* averaging marginally smaller than *bailloni* (Fig. 1; see also Appendix in Shirihai *et al.* 1995).

The form *colstoni* is markedly different from the Seychelles population (*nicolae*) of 'Audubon's' Shearwater in the following respects. The wing, tail and bill are rather noticeably longer and the bill structure markedly robust, with deeper/thicker base (including tubes) and unguis region, the maxillary unguis being much better developed than that of Seychelles birds—in fact, in this respect the two represent clear extremes. Pigmentation above is overall slightly sootier blackish (less brown), thus similar to *bailloni* (see above); there is a fairly clear tendency for the dark area below the eye to be more solid and more

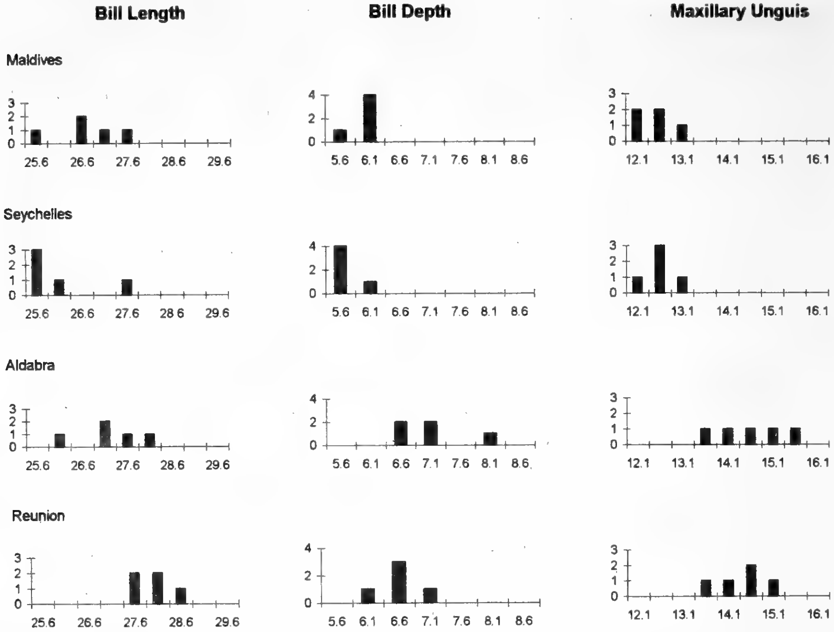

Figure 1. Measurements of four populations (for each, $n=5$) of Audubon's Shearwater *Puffinus lherminieri*. Vertical axis shows number of birds; horizontal axis gives measurements expressed in 0.5-mm ranges (figures indicate lower point of range: e.g. 25.6=range 25.6–26.0 mm). Bill length measured from feathering; bill depth from below tubes. In this study, Maldives and Seychelles populations are regarded as *P. l. nicolae* (showing similarity in bill length and depth and in development of maxillary unguis), with Aldabra and Réunion populations treated as *P. l. colstoni* and *P. l. bailloni* respectively (showing deeper bill and clearly better-developed maxillary unguis). Material from Natural History Museum, Tring, and specimens loaned to same.

sharply demarcated from the white throat, and this dark area is generally more extensive (from bottom of eye to lower border of dark=6–8 mm on *colstoni*, against 4–5 mm on Seychelles population); the pectoral patches are distinctly larger, leaving a smaller white area in between compared with Seychelles birds (15–24 mm on *colstoni*, against 31–38 mm in Seychelles)—in this respect the two again represent the two extremes, and (although based on small samples) it appears that there is no overlap; in *colstoni* there is also a slight tendency for the undertail-coverts to contain a smaller number of feathers with complete brown colour, having slightly more feathers with mixed whitish and brown (on the corresponding feathers of each population, the white area is generally larger on *colstoni*), thus creating a slightly less clear pattern than the generally more solid dark undertail-coverts that are usually an obvious character of Seychelles birds.

The Maldives population represents a somewhat intermediate form between *colstoni* and the Seychelles, although in most respects it clearly approaches the latter form and is thereby separated from the former. Aldabran *colstoni* averages only marginally larger than Maldives birds, but the latter's bill (proportions/thickness) is weak and in fact almost identical to that of Seychelles birds (see Fig. 1) and therefore shows a difference corresponding to that between *colstoni* and Seychelles birds described above; *colstoni* generally is marginally blacker/darker (less brown) above than Maldives birds and tends to have a slightly sharper demarcation between the blackish-brown area below the eye and the whitish throat, while the pectoral patches are distinctly larger and darker (exhibiting almost the same difference as found between *colstoni* and Seychelles populations: white divide between patches = 15–24 mm in *colstoni*, against 19–35 mm in Maldives); the undertail-coverts, however, are similar in pattern to those of Maldives birds.

Specimens examined (at Natural History Museum, Tring). Puffinus lherminieri: colstoni (Aldabra, 5); *nicolae* (Seychelles region, 9, incl. 2 on loan from Muséum de Paris; Maldives, 5); *bailloni* (Réunion, 5, incl. 3 on loan from Muséum de Paris).

Discussion

Our investigations so far (as presented above) have demonstrated that the small-shearwater populations that have colonised the Indian Ocean cannot be determined (sub)specifically primarily by the coloration of the undertail-coverts (generally white in *bailloni* from the Mascarenes, and largely brown in the remaining populations). Other, morphological differences, no less distinct and probably of even greater importance, are also involved, such as the bill structure, length of middle toe, upperpart coloration, development of pectoral patch and overall size and proportions (Table 1). In all the latter parameters (i.e. excluding undertail-covert coloration) the Aldabran population (*colstoni*) and that of the Mascarenes, including Réunion, are virtually identical in sharing the overall larger size (including the longer toes), predominantly blacker upperparts and characteristically more robust bill and better-developed pectoral patches than all other breeding populations examined (in this study, from Seychelles area and Maldives). This in fact contradicts previous assumed criteria as used by e.g. Jouanin (1970), who placed all birds with white undertail-coverts in one form, *bailloni*, and those with brown undertail-coverts, including the Aldabran birds, under *nicolae*. The Aldabran type-series has probably never been examined properly; Jouanin, for example, expressed his thanks to A. W. Diamond for informing him about the Aldabran specimens, but it appears that he did not have the opportunity to examine them directly.

The material available to us is rather limited and does not allow a complete review of the taxonomic relationships of the small shearwaters in the Indian Ocean; we have been unable to look at any specimens from the Chagos archipelago and the Amirantes, though a small sample of the latter population was, in any case, regarded as inseparable from Seychelles birds by Jouanin (1970). Nevertheless, the relatively small sample size we have been able to examine (see above: good material from the Seychelles complex and the Maldives population, as well as *bailloni* of Réunion and *colstoni* from Aldabra) was sufficient to confirm that *colstoni* is similar to

TABLE 1
Forms of *Puffinus lherminieri* in the Indian Ocean and their comparative features

	bailloni (Réunion-Mascarenes)	*colstoni* (Aldabra)	*nicolae* (Seychelles)	*nicolae* (Maldives)
General size (based mainly on wing)	large	medium to large	small	medium
Bill structure, maxillary unguis and nasal tube	longish but very robust, with well-developed and deep unguis and tube	much as *bailloni*	narrower/shorter, with relatively poorly developed unguis and tube	slender, with moderately developed unguis, generally approaching Seychelles form
Upperpart colour	blackish-brown	as *bailloni*	generally brown	approaching Seychelles form or slightly darker
Undertail-coverts	generally white, with brown feathers on sides	brown with relatively good number of mixed brown and white short coverts	generally brown	predominantly brown (with small amount of white on small coverts)
Pectoral patches	large	very large	small	small to medium
Middle toe	long(est)	long	small	small to medium

Mascarene birds in nearly all morphological aspects (but with mainly brown instead of mainly white undertail-coverts) and is thereby relatively distinct from all other populations in the Indian Ocean, i.e. from all those in the Seychelles and northeastwards from there. In fact, judging from the accepted validity (based on morphological differences) of other subspecies in closely related species, such as the relationships between the recognised forms of Little Shearwater *P. assimilis* in the southern oceans (*kermadecensis*, *haurakiensis* and *elegans*) or between the Australasian ones (*tunneyi* and *assimilis*), as well as between these two groups, *colstoni* is by the same parameters at least as distinct or even more so from other populations of Audubon's.

The colonisation of the western Indian Ocean by the various forms of small shearwater is apparently more widespread than is generally realised. This probably applies equally to *colstoni*, which presumably also breeds slightly to the east on Cosmoledo and Astove (Diamond 1994, Stoddart 1984), and other forms are continuing to be found, e.g. the race *P. l. temptator* (brownish above and on underwing-coverts) from the Comoros (Louette & Herremans 1985). Even with some material lacking, however, that which is available is adequate to demonstrate the following affinities in relation to geographical factors:

Both *bailloni* (Mascarenes) and *colstoni* breed approximately around 10-20°S on elevated limestone islands, and these two have the darkest upperparts, the largest size, the longest middle toe, the most robust bill and the most strongly developed pectoral patches, though they differ from each other in undertail-covert coloration.

The *nicolae* population which has colonised the Seychelles complex (known to nest in the Amirantes group and east to Denis, Aride, Cousin and Mahé) breeds between 10°S and the equator mainly on the low coral and granite islands, and has a slightly smaller size and shorter middle toe, browner upperparts, narrower/smaller bill and much smaller pectoral patches. The population from the Maldives, and apparently also from Chagos archipelago (and thus breeding on both sides of the equator), would seem from our present knowledge to be best retained under *nicolae*, although it is marginally larger and darker than birds from the Seychelles.

The development of distinct morphological characters according to geographical (latitudinal and longitudinal) location of the two main population groups in the western Indian Ocean, i.e. *nicolae* on the one hand and *bailloni* and *colstoni* on the other, appears rather clear in this study. Moreover, it would seem likely that there is more involved in this concept with regard to the development of a stronger bill (probably related to nutrition) and larger size (including longer toes, possibly an adaptation related to burrow-excavation in the harder terrain of these islands) in the more southerly population, where the marine habitat appears to differ (in terms of geomorphology and hydrography, and the consequent nature and sub-surface dispersion of marine organisms) from that farther north, in the Seychelles and Maldives.

In summary, the above shows that the Aldabran and Mascarene forms of small shearwater are very closely related to each other, and together differ very strongly from all other forms in the Indian Ocean; they may even represent a distinct species with two subspecies. The position of *bailloni* needs to be clarified, since the type specimen is missing and since Bonaparte's (1857) original very brief description ("*Minimus: nigricans; subtus abrupte a rostro candidus*") is totally inadequate and could apply to many small-shearwater forms; in addition, the name *bailloni* has been used by several authors to refer to other forms (e.g. by Godman 1907–10 for birds with close affinities to Little Shearwater of the east-central Atlantic), resulting in a certain confusion.

With regard to the proposal to give specific rank to the populations of small shearwaters breeding in the Indian Ocean (see above and also Shirihai *et al.* 1995), if such a split is tenable and *bailloni* is shown to be an acceptable name, then the Mascarene and Aldabran populations would become *P. bailloni* with subspecies *P. b. bailloni* and *P. b. colstoni*, with the other Indian Ocean populations (i.e. Seychelles area eastwards to the Maldives) united under *P. nicolae*. If, however, further investigation reveals the name *bailloni* to be inapplicable for describing any discrete population, then the former would become *P. colstoni* and its Mascarene population would require a new subspecific name.

Acknowledgements

We should like to thank Dr Robert Prŷs-Jones for his help with the literature and for much useful discussion during the preparation of the first draft of this paper. We are also most grateful to P. R. Colston, Michael Walters and Mrs F. E. Warr at the Natural History Museum, Tring, and to the rest of the museum staff for their help during this study and at all other times. We also warmly thank Dr David Snow for his help and advice during the preparation of this paper.

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The continuing presence of Macgregor's Bird of Paradise *Macgregoria pulchra* on Mount Albert Edward, Papua New Guinea

by R. J. Safford & L. M. Smart

Received 30 August 1995

Macgregor's Bird of Paradise *Macgregoria pulchra* is a little-known species in a monotypic genus endemic to the highest areas of the central ranges of New Guinea. It occurs in the Snow and Star Mountains of west and central New Guinea, and in the mountains of the southeast (Beehler *et al*. 1986, Coates 1990). It is unknown between these two areas, despite much apparently suitable habitat. The species is large and unwary and so is often hunted. Collar *et al*. (1994) added it to the Red List as a globally threatened species, on the basis of small population size, fragmentation of range and presumed declines caused by hunting.

The southeastern population lives entirely within Papua New Guinea, with records from a 70 km strip of the central cordillera between Mount Albert Edward (Wharton Range) and Mount Victoria

(Owen Stanley Range). Recent reports confirm the survival of this population on Mount Victoria (Barker & Croft 1977), Mount Scratchley (Clapp 1986) and English Peaks (Beehler 1991). Local fluctuations in abundance are well-known at English Peaks (Beehler 1991, Hicks & Burrows 1992) and are believed to result from nomadism in response to food availability. This makes true population changes difficult to detect. However, on Mount Albert Edward, *Macgregoria* was last recorded in July 1933 (Mayr & Rand 1937), despite visits by several observers at various seasons since then (Bell 1971, Barker & Croft 1977, P. Lambley pers. comm. 1995). The possible disappearance of the species from one of the few sites from which it is known is disturbing (Beehler 1991). It is therefore noteworthy that *Macgregoria* was seen again close to Mount Albert Edward in April 1995. This note describes the record.

We were present above 2800 m altitude (the species' usual lower limit) for a little over five days. Three days were spent around Murray Pass (2800–3000 m), the remaining time around the grassy basin of the Guimu River, often called the Neon, or Neowa, Basin (2870–3100 m). The area explored was therefore a southwestern extension of the major alpine area of Mount Albert Edward (3990 m). Below Murray Pass, vegetation appeared to be lower montane forest (*sensu* Paijmans 1976). The pass and environs contain several km^2 of tree-fern (*Cyathea* sp.) grassland. Slopes around the Neon Basin hold a mosaic of upper montane forest and tree-fern grassland. The Basin itself contains about 15 km^2 of flat, open grassland almost devoid of tree-ferns.

No sign of *Macgregoria* was found until 0800 hr on 11 April 1995, when a group of three was found in upper montane forest at the edge of a small clearing on the southwest slope of the Neon Basin, along a path leading directly from the Basin to Woitape (at 3080 m; 8°30′S, 147°18′E). The birds attracted attention by their wingbeats, which were the loudest of any species in the area, and were watched for ten minutes before being lost to view. Identification was based on the large size and brilliant yellow caruncle and duller yellowish patch on the primaries contrasting with the otherwise black plumage. The legs were blue-grey, looking thick. No call was heard. The birds foraged in thick, low shrubbery or in taller, more open trees. In the latter, they hopped along branches with feet together, frequently tearing moss off branches with the bill, and then dropping it; one bird did this five times in rapid succession. No prey item was seen and no fruit was taken. *Macgregoria* is believed to feed mostly on fruit of the conifer *Dacrycarpus compactus*; unidentified conifers were frequent, but not dominant, in the area, but none was seen fruiting.

In 1933, *Macgregoria* was common on the main dome around 3680 m but only two were seen at Murray Pass (Mayr & Rand 1937). We did not reach the former area. Our single record in five days, and the failure of recent visitors to find any, suggest that *Macgregoria* is rare in the area. Knowledgeable villagers in the area support this view (P. Lambley pers. comm. 1995), although those we met were unreliable. The area we visited is much used by local hunters who frequently set fires; however, few locals seemed to visit the main dome.

Mount Albert Edward is at the centre of a 180 km^2 area entirely above 3000 m, important for several other rare birds of high altitudes, such as Salvadori's Teal *Anas waigiuensis*, Logrunner *Orthonyx temminckii*, Mountain Robin *Petroica bivittata*, Greater Ground Robin *Amalocichla sclateriana*, Black Sitella *Daphoenositta miranda* and Eastern Alpine Mannikin *Lonchura monticola* (Mayr & Rand 1937; pers. obs.). Further highland areas extend to the northwest but are little-known. To the southeast, Mounts Scratchley and Victoria can be reached from the Mount Albert Edward highlands without dropping below 2960 m. Therefore it may be possible for *Macgregoria* to travel the length of this part of its range without leaving its favoured habitat. Further study is needed to establish whether this actually happens.

This observation shows that *Macgregoria* has not become extinct on Mount Albert Edward, as seemed possible beforehand. However, the species' long-term habitat area requirements and vulnerability to hunting remain unknown. The logistical problems of studying it are daunting (Beehler 1991), so it is noteworthy that the site of our observation is one day's walk from Woitape, a readily-accessible village.

Acknowledgements

We were present in Papua New Guinea through employment on the Lakekamu Integrated Conservation and Development Project, and thank the Government of Papua New Guinea for allowing this. Bruce Beehler encouraged and supported our visit to Mount Albert Edward, and commented on a draft manuscript. British Airways Assisting Conservation provided our flights between U.K. and Australia. Peter Lambley provided additional information.

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A new subspecies of *Margarops fuscus* (Scaly-breasted Thrasher) from St. Vincent, Lesser Antilles

by Andrew W. Kratter & O. Garrido

Received 28 September 1995

Recently, Buden (1993) described geographic variation in *Margarops fuscus* (Scaly-breasted Thrasher, Mimidae), a species endemic to the larger islands in the Lesser Antilles. *Margarops fuscus* previously was placed in the monotypic genus *Allenia* (initially placed there by Cory 1891), but was merged by Bond (1959) into *Margarops*, another genus endemic to the West Indies. This merger was adopted by the American Ornithologists' Union (1983). Surprisingly, given the extent of intraspecific variation present in most West Indian bird species, *M. fuscus* had been considered monotypic from Cory (1891) until Buden (1993). Buden named three new subspecies of *M. fuscus*: a northern subspecies (*M. f. hypenemus*) from Saba and Barbuda south to Guadeloupe and Marie-Galante; a subspecies restricted to St. Lucia (*M. f. schwartzi*), and a subspecies restricted to Barbados (*M. f. atlanticus*). The nominate subspecies thus was considered to occur on the remaining larger islands in the Lesser Antilles, with populations both north of St. Lucia on Dominica and Martinique, and populations south of St. Lucia, on St. Vincent and Grenada.

Recently, the Louisiana State University Museum of Natural Science (LSUMZ) purchased the privately held collection of Albert Schwartz, who collected over 6000 bird specimens from throughout the West Indies during the 1950s and 1960s. While identifying and curating specimens from the Schwartz collection into the LSUMZ, Kratter was struck by plumage differences between *Margarops fuscus* specimens from St. Vincent and those from other islands in the Lesser Antilles. With further analysis of specimens from other institutions (see Acknowledgements), we propose to name this distinct taxon:

Margarops fuscus vincenti subsp. nov.

Holotype. Louisiana State University Museum of Natural Science (LSUMZ) no. 142651; a male collected, and presumably prepared, by D. C. Leber on 14 March 1961 at Lourt, St. Andrew Par., St. Vincent. The original specimen number is 1727.

Description of holotype. Capitalized colour names are from Ridgway (1912). Crown, nape, mantle, rump, scapulars, and auriculars Sepia, the lores slightly darker. Upper tail coverts Mummy Brown. Ground colour of chin and throat Bister, the extreme tips of some central feathers whitish. Ground colour of upper and middle breast Saccardo's Brown, the feathers tipped whitish (*c*. 1 mm), imparting a scalloped appearance. Central lower breast and central belly feathers whitish, with wide (3–4 mm) Saccardo's Brown subterminal edges and wide

TABLE 1

Extent of white on rectrix no. 6 in subspecies of *Margarops fuscus*, measured from the tail feather tip to the proximal extent of white on the inner web (measured midway between rachis and feather edge). Individuals with extremely worn, highly abraded, or moulting tail feathers were omitted. *M. f. atlanticus* was not available for this analysis. The one-way Analysis of Variance was significant ($F=39.13$, $P<0.0001$). All possible Scheffe's post-ANOVA contrasts were significant ($P<0.05$). Measurements taken by Kratter on LSUMZ specimens.

	n	mean (mm)	s.d.
M. f. hypenemus	21	15.5	2.2
M. f. fuscus	24	13.6	1.4
M. f. vincenti	6	11.1	1.7
M. f. schwartzi	18	18.8	2.0

(*c.* 4 mm) whitish tips. Flanks Snuff Brown, the feathers with buffy edges. Under tail coverts white, with large Sepia spots. Dorsal surfaces of remiges and rectrices somewhat darker than upperparts. The innermost two tertials have small (*c.* 1 mm) white feather edges. The greater wing coverts have small (<1 mm) whitish edges to the feathers. All but the innermost rectrix (no. 1) are edged whitish, with the white extending further on the inner webs than on the outer webs. The white edges are largest on the outermost rectrices (9 mm along shaft on inner web of rectrix no. 6; only 6 mm on outer web), and progressively decrease to a 1 mm white edge on inner web of rectrix no. 2. Measurements: exposed culmen 17.0 mm; wing chord 120.1 mm; tail 93.5 mm; and tarsus 26.9 mm.

Diagnosis. Underparts darker than other subspecies of *M. fuscus*, particularly on chin and throat. This relative darkness results from fewer feathers with white edges, smaller white edgings to those feathers with pale edges, and a slightly darker brown ground colour. The subterminal brown spots on the flanks are larger and darker than other races. The white feather edgings on the under tail coverts are smaller than other races. The extent of white tips on the outer tail feathers of *M. f. vincenti* is less than that found on *M. f. hypenemus*, *schwartzi*, or *fuscus* (Table 1); these differences were significant between *vincenti* and each of these other subspecies (Table 1), and there was no overlap in this character between *vincenti* ($n=6$) and either *hypenemus* ($n=21$) or *schwartzi* ($n=18$). The back of *M. f. vincenti* is less rufescent than *M. f. atlanticus*.

Distribution. Restricted to the island of St. Vincent in the Lesser Antilles.

Paratypes. Three other specimens were collected by A. Schwartz at the type locale in 1961: LSUMZ no. 142650, female, 9 March; LSUMZ no. 142652, male, 26 December; and LSUMZ no. 142653, male, 29 December. Two other specimens were collected by D. Leber 3 mi. NW Rabacca, Charloote Parish, St. Vincent, in 1961: LSUMZ no. 142654, female, 15 March, collected by D. C. Leber and LSUMZ no. 142655, male, 15 March, collected by D. C. Leber. The paratypes agree with the holotype, except as follows: LSUMZ 142652, a fresher-plumaged bird, has more white on the belly, the breast and lower throat feathers have slightly larger white edgings, and the tertials have larger white edges. The brown coloration throughout is slightly darker. LSUMZ 142653 and 142655 have more white in the belly and larger white edges on the tertials.

Etymology. This taxon is named *vincenti* after its restricted distribution on the island of St. Vincent.

Commentary. Apart from the plumage distinctions mentioned above, *M. fuscus vincenti* differs morphologically from other subspecies. Except for the large subspecies in the northern Lesser Antilles (see Buden 1993), however, these differences tend to be slight, and overlap among subspecies is great. Garrido measured four mensural characters (wing chord, tail length, exposed culmen, and tarsus length) of skin specimens (see Acknowledgements) from throughout the distribution of *M. fuscus*. Populations of the northern *M. f. hypenemus* were larger than all other populations in all four measures (Table 2), as Buden (1993) pointed out. *Margarops f. hypenemus* showed little or no overlap in these characters with *vincenti*. Our measurements of wing, tail, and tarsus in *vincenti* tended to be slightly larger than those of the nominate subspecies (Table 2), but overlap was high. The nearest populations of the nominate subspecies to St. Vincent are approximately 120 km north on Martinique, 200 km north on Dominica, and 110 km south on Grenada. The nearest population to *M. f. vincenti*, however, is on St. Lucia, approximately 50 km north. The only morphological difference consistent in both sexes between this population, which alone makes up *M. f. schwartzi*, and *vincenti* was the longer bill in the former (Table 2). Our sample from the population of Barbados (*M. f. atlanticus*), approximately 160 km east of St. Vincent, was too small ($n=1$ for both sexes) to draw conclusions from morphometric analyses.

Our data largely agree with Buden's (1993) analysis of geographic variation in this species. He mentioned (p. 80) the darker ventral coloration of specimens from St. Vincent, but apparently did not consider the differences sufficient for taxonomic recognition. His specimens from the northern Lesser Antillean islands are largest in wing chord, which, in his diagnosis, is the sole distinction separating *hypenemus* from the nominate subspecies. However, our measures of wing chord on individuals from Antigua (Table 2), considered by Buden to belong to the long-winged *hypenemus*, do not agree with his data (1993, Table 1). Our measures for wing chord of the Antigua population fall within the range given for the nominate form. Our data agree with the unpublished data of W. C. Arendt and J. Faaborg, who measured live birds on most islands within this species' distribution. With a limited sample ($n=2$), they found wing chord lengths of 116 and 118 mm, closer to the means of 117 and 119 mm that we found for males and females, respectively (Table 2), than to the means of 125.4 and 125.5 found by Buden (1993) for males and females, respectively. Although this suggests that the Antigua population may more

TABLE 2

Measurements of *Margarops fuscus* specimens by island and, for subspecies found on more than one island, by subspecies. For subspecies, means were calculated using island mean values (for those available) as individual samples. Antigua is omitted for mean values of *M. f. hypenemus* (see text). Mean, standard deviation and sample sizes (in parentheses) are given. Measurements taken by Garrido.

Subspecies	Island	Sex	Wing (mm) mean, s.d. (*n*)	Tail (mm) mean, s.d. (*n*)	Bill (mm) mean, s.d. (*n*)	Tarsus (mm) mean, s.d. (*n*)
M. f. hypenemus	Saba	M	124, 3.3 (5)	100, 2.0 (5)	18.0, 1.0 (5)	30.2, 0.7 (5)
		F	124, 1.0 (3)	103, 1.0 (3)	19.6, 0.6 (3)	31.2, 0.6 (3)
	St. Eustatius	M	—	100, 3.3 (5)	18.0, 0.9 (5)	30.0, 1.4 (5)
		F	—	—	—	—
	St. Kitts	M	125, 3.3 (8)	100, 3.5 (9)	19.0, 1.7 (8)	30.0, 0.7 (9)
		F	125, 2.4 (9)	100, 3.4 (8)	19.0, 1.2 (9)	31.0, 0.6 (8)
	Nevis	M	125, 1.5 (4)	103, 4.0 (4)	18.7, 0.5 (4)	30.0, 1.1 (4)
		F	125, 1.4 (2)	101, 1.4 (2)	19.5, 0.7 (2)	30.5, 0.6 (2)
	Barbuda	M	—	—	—	—
		F	128 (1)	112, 0.7 (2)	17.6, 0.0 (2)	29.6, 0.7 (2)
	Antigua	M	117, 2.9 (3)	102, 1.2 (5)	18.0, 0.7 (6)	30.5, 1.3 (6)
		F	119, 3.5 (2)	98, 2.3 (4)	17.6, 1.2 (4)	30.2, 1.7 (4)
	Montserrat	M	124, 0.6 (3)	102, 1.5 (3)	19.6, 1.2 (3)	31.0, 0.7 (3)
		F	125, 1.8 (2)	100, 5.7 (2)	18.0, 1.8 (2)	29.4, 0.8 (2)
	Guadeloupe	M	—	94, 8.5 (2)	—	—
		F	—	96, 6.0 (4)	17.0, 0.5 (4)	31.0, 1.5 (4)
	Marie-Galante	M	125 (1)	97 (1)	17.6, 0.0 (2)	29.6, 0.7 (2)
		F	—	—	—	—
M. f. hypenemus		M	125, 0.5 (5)	99, 3.0 (7)	18.5, 0.7 (6)	30.1, 0.5 (6)
M. f. hypenemus		F	125, 1.5 (5)	102, 5.4 (6)	18.4, 1.1 (6)	30.2, 0.7 (6)
M. f. fuscus	Dominica	M	119, 2.7 (31)	93, 3.2 (27)	17.3, 0.8 (29)	29.0, 1.1 (29)
		F	117, 4.8 (19)	92, 5.3 (16)	17.6, 0.8 (16)	29.0, 1.5 (16)
	Martinique	M	117, 4.0 (5)	89, 5.0 (6)	17.3, 1.1 (4)	28.0, 1.3 (6)
		F	115, 4.8 (7)	90, 5.4 (6)	18.0, 1.0 (7)	29.0, 1.3 (5)
	Grenada	M	115, 2.4 (6)	86, 3.5 (6)	17.0, 0.9 (6)	27.9, 1.5 (6)
		F	116, 2.4 (5)	84, 2.3 (3)	17.1, 0.6 (5)	28.4, 0.6 (6)
M. f. fuscus		M	117, 2.0 (3)	89, 3.5 (3)	17.2, 0.2 (3)	28.3, 0.6 (3)
M. f. fuscus		F	116, 1.0 (3)	89, 4.2 (3)	17.5, 0.5 (3)	28.7, 0.6 (3)
M. f. schwartzi	St. Lucia	M	119, 6.3 (30)	90, 5.3 (29)	19.0, 2.5 (29)	29.3, 2.0 (29)
		F	118, 6.1 (9)	91, 7.0 (9)	19.3, 3.0 (9)	29.0, 3.4 (8)
M. f. vincenti	St. Vincent	M	120, 3.3 (8)	91, 3.0 (8)	17.0, 1.0 (9)	29.3, 1.2 (9)
		F	116, 4.1 (12)	90, 3.0 (11)	17.6, 0.5 (12)	30.0, 1.5 (13)
M. f. atlanticus	Barbados	M	122 (1)	98 (1)	15.3 (1)	30.6 (1)
		F	118 (1)	95 (1)	16.9 (1)	30.0 (1)

appropriately be placed with the nominate subspecies, the other three measures (culmen, tail, tarsus) were closer to *M. f. hypenemus* than *M. f. fuscus* (Table 2). Geographically, the Antigua population is surrounded by populations of *M. f. hypenemus*. The Antigua population should be investigated further to see if it is taxonomically distinct.

Acknowledgements

This paper results, in part, from the funding provided to Garrido by the American Museum of Natural History. Garrido's travel to various museums and institutions was funded by the RARE Center for Tropical Conservation. We thank the curators, collection managers and technicians from the Louisiana State University Museum of Natural Science, the Museum of Comparative Zoology at Harvard University, the American Museum of Natural History, the Carnegie Museum, the National Museum of Natural History, and the Academy of Natural Sciences of Philadelphia. We are also grateful to Mary LeCroy and Carla Dove for providing pertinent literature. We are much in debt to Wayne C. Arendt and John Faaborg for giving us their valuable unpublished data "Morphometrics of West Indian Birds". J. V. Remsen reviewed the manuscript.

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Coloration and biometrics of fledgling Audubon's Shearwaters *Puffinus lherminieri* from Réunion Island, Indian Ocean

by Vincent Bretagnolle & Carole Attié

Received 14 October 1995; revised 5 April 1996

In a recent paper, Shirihai *et al.* (1995) described a new species of shearwater, *Puffinus atrodorsalis.* Here we would like to highlight that Audubon's Shearwaters from Réunion Island (taxon *bailloni*), Indian Ocean, show characters that were apparently unknown to the authors. Fledglings of *bailloni* may in particular appear very similar to *P. atrodorsalis.*

The Audubon's Shearwater breeding population of Réunion Island is currently classified as *Puffinus lherminieri bailloni* (e.g. Jouanin & Mougin 1979, Warham 1990). Actually, adults of *bailloni* show diagnostic characters of the *lherminieri* group, such as pink legs, brown upperparts, lack of white remiges below and biometrics (especially for bill and wing dimensions; see Shirihai *et al.* 1995 for values), but they also share characters with *assimilis,* such as white undertail feathers (except for the two central feathers that are apparently invariably brown at the tip: Jouanin 1970; pers. obs.). Despite this last character, *bailloni* is treated as a *lherminieri* in all recent systematics (see Shirihai *et al.* 1995 for references). We concur with this treatment on the basis of a supplementary trait, that curiously has never been used up to now, namely vocalizations. Despite the existence of geographic variation (as in many other petrels: see for a review Bretagnolle in press), calls of *bailloni* are similar to calls of *lherminieri* from Marquesas, Tahiti, Gambier, Comoros, West Indies and Galapagos, while they are consistently distinct compared to calls of *assimilis* from northern New Zealand, Madeira and Rapa (Bretagnolle unpubl. data).

Between 1987 and 1996, we have conducted intensive fieldwork on the four petrels that breed on Réunion (Bretagnolle & Attié 1991, Attié *et al.* submitted), and were able to catch fledglings of *bailloni* as well as adults. Moreover, we measured all specimens of the *lherminieri/assimilis* complex in Paris, Réunion, Tring and Wellington Museums ($n=128$ *lherminieri,* 120 *assimilis*) over the last two years. A total of 47 *bailloni* were thus available for investigating the potential effects of age, sex and type of material on the biometrics of this taxon. This has led us to recognize important (although yet unreported in the literature) differences in plumage and biometrics according to age in *bailloni* (Table 1), some of which may prove to be unique to that taxon, others not. Three characters, in particular, show a major change between fledgling and adult stages: (1) back colour, which turns from black or dark brown to brown; (2) leg colour, which turns from blue, bluish-grey or a mixture of blue and pink in fledglings, to pink in most adults (an adult female collected at sea had blue legs, however; C. Jouanin, pers. comm.); and (3) bill depth (measured at hook), which

TABLE 1

Comparative biometrics of Audubon's Shearwaters from Réunion Island, according to type of specimen, age and sex. Mean, standard deviation and sample size are given. Data were statistically treated with Analysis of variance. A one-way ANOVA was conducted on the factor sex. Then a two-way ANOVA considered age and type of material as factors: no significant interaction was found (except for bill depth, $P=0.02$). We thus present data treated with one-way ANOVA for each of the latter factors. *Atrodorsalis* biometrics are shown for comparison

	bailloni			*bailloni*			*bailloni*			*atrodorsalis*	
Variable	Alive (15)	Skins (32)	test	adults (11)	Fledglings (19)	test	Male (13)	Female (9)	test	skin[1] (1)	
Wing	199.3 ± 5.43	198.4 ± 7.88	NS	202.1 ± 5.13	196.5 ± 6.74	0.02	201.0 ± 4.36	200.6 ± 6.02	NS	204.5	204[2]
Tail	76.3 ± 2.95	76.8 ± 3.11	NS	77.8 ± 3.54	75.0 ± 1.94	0.02	77.3 ± 3.48	77.3 ± 3.02	NS	78	82
Tarsus	41.1 ± 1.23	41.2 ± 1.56	NS	41.0 ± 1.42	41.7 ± 1.65	NS	40.7 ± 1.12	41.3 ± 1.67	NS	40	39.2
Culmen	29.1 ± 0.86	28.8 ± 1.01	NS	29.0 ± 1.17	29.0 ± 0.94	NS	29.1 ± 0.91	28.4 ± 0.83	NS[3]	28	27.1
Bill depth	6.7 ± 0.41	6.8 ± 0.51	NS	7.1 ± 0.45	6.5 ± 0.38	0.001	7.0 ± 0.47	6.7 ± 0.45	NS[3]	—	5.9
Bill width	10.8 ± 0.76	11.0 ± 0.58	NS	10.9 ± 0.66	11.0 ± 0.60	NS	11.2 ± 0.59	10.8 ± 0.41	NS[3]	—	10.9
Body weight[4]	217.8 ± 14.16	216.7 ± 17.7	NS	219.2 ± 12.77	213.1 ± 16.33	NS	225.8 ± 17.05	212.0	NS	—	—

[1] From Shirihai *et al.* (1995).

[2] Same specimen measured by VB.

[3] A Multiple Analysis of Variance (MANOVA) performed on the three bill characters gives a significant result ($P=0.05$).

[4] Only 19 birds have been weighed, most of them unsexed.

increases by 10.5% with age (see Table 1). Wing and tail lengths also increase, but to a lesser extent (Table 1 for means and statistics). The first two characters may be unique to *bailloni*, although *P. l. polynesiae* (from the Gambier Is: Bretagnolle pers. obs.) and the Yelkouan Shearwater *P. yelkouan* (Yésou *et al.* 1990, R. Zotier pers. comm., and pers. obs.) show a similar pattern. But the increase in bill depth occurs in all *lherminieri*, and *assimilis* for which fledgling skins could be examined (although in slightly smaller proportions), as well as in other petrels (e.g. Genevois & Bretagnolle 1995, and references therein). Other changes also occur in *bailloni*, in bill colour (blue and black in fledglings versus pure black in adults) and the shape of blue and black patches on the upper half of the tarsus (tarsus in fledgling *bailloni* as that described for *atrodorsalis* in Shirihai *et al.* 1995). It is noticeable that the five characters listed above are the most important characters that have been cited as separating *atrodorsalis* from other shearwaters, including *bailloni*.

Fledgling of *bailloni* on Réunion occurs mainly, if not only, between December and April (Jouanin 1970, 1987, Jadin & Billet 1986, Attié & Bretagnolle unpubl. data), although there are two skins in Paris Museum, labelled as fledglings (but without any trace of down), that were collected in August. If moult of fledglings occurs before (or around) the following breeding period (which starts on Réunion in late August), fledgling *bailloni* will thus remain in their juvenile-like plumage (i.e. black and white, with blue legs) from December until August or September, which suggests that separation at sea between *atrodorsalis* and fledgling *bailloni* may be extremely difficult. Incidentally, the period during which fledgling *bailloni* are in their juvenile-like plumage exactly matches the dates that were reported by Shirihai *et al.* (1995) for *atrodorsalis*, although the seasonal pattern may also reflect their lack of data between August and December.

This new information with regard to coloration, biometrics and breeding phenology of *bailloni* from Réunion Island may therefore raise doubts about the identity of the two birds described in Shirihai *et al.* (1995) under the new species, *atrodorsalis*: the holotype (the "Durban bird"), and the BMNH specimen (No. 1866.7.21.10), labelled as juvenile from Réunion. Given the similarity between these two birds, Shirihai *et al.* (1995) concluded that the BMNH skin was an overlooked *atrodorsalis*, not a *bailloni*. We would like to offer the alternative, and maybe more parsimonious explanation, that the BMNH specimen is indeed a juvenile of *bailloni* as it is labelled (see also Bourne 1995). The taxonomic status of the Durban specimen will be discussed in more detail in a companion paper (Colston *et al.*, to be submitted).

Acknowledgements

We thank P. Duncan for improving an earlier draft, and M. Attié and J.-C. Stahl for their help during field work in 1995. W. R. P. Bourne and C. Jouanin agreed to comment the manuscript. P. Colston, C. Jouanin and A. J. Bartle kindly allowed access to Museum collections in their care.

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IN BRIEF

EXTRALIMITAL RECORD OF THE SPOT-WINGED FALCONET *SPIZIAPTERYX CIRCUMCINCTUS*

Spiziapteryx circumcinctus is distributed from Bolivia and Paraguay to the centre of Argentina and has its southern limit in the northern part Rio Negro eastwards to the southern part of the province of Buenos Aires (Short 1975, Remsen & Traylor 1989, Narosky & Di Giacomo 1993). Throughout this range it occurs in arid woodlands, mainly dry forests and savannas (Short 1975, Blake 1977). On 11 January 1991 I observed an individual in an area of scattered trees in the vicinity of "Brazo Rico" (*c.* 185 m above sea level), in the southern part of the Parque Nacional Los Glaciares, province of Santa Cruz, southern Argentina. The main field characters of the species were clearly observed: body size about that of American Kestrel *Falco sparverius*, pale and predominantly streaked underparts, rounded and white-spotted wings, dark tail barred with white, and conspicuous white rump contrasting with browner upperparts.

The known range of the species has recently been extended to northern Bolivia (Remsen & Traylor 1989) and the eastern Argentine provinces of Corrientes (Contreras 1986) and Entre Ríos (Abadie

1993). The bird that I saw may well have been just a wandering individual, not necessarily evidence of a southward range extension. The locality is more than 1000 km distant from the southern limit of the known range of the species, and in a quite different environment, viz. the andinopatagonian subantarctic forests. Other birds recorded in this area, such as *Enicognathus ferrugineus*, *Campephilus magellanicus*, *Pygarrhichas albogularis* and *Pyrope pyrope*, are evidence of the andean affinity of the local avifauna.

I am grateful to Alejandro Giraudo and Gustavo Marino for their encouragement and for providing important data, to Bianca L. Reinert, Júlio de Moura Leite, David W. Snow and Dante M. Teixeira for critically reading the manuscript. The Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) is thanked for the financial help formerly offered to my researches, and Jorge B. Nacinovic for the revision of this manuscript.

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MARCOS R. BORNSCHEIN

4 July 1995

RANGE EXTENSIONS OF SOME COTINGAS FROM RONDONIA, BRAZIL

During an eight-day rapid ornithological assessment in April 1995 in the Parque Estadual, Guarajá-Mirim (10°50′S, 64°85′W), Rondonia, Brazil, I recorded range extensions for four cotingas.

PURPLE-BREASTED COTINGA *Cotinga cotinga*

On 23 April, at the edge of a *terra firme* forest clearing. I observed for 5 minutes an adult male Purple-breasted Cotinga. It was perched motionless in dead bare branches in the forest sub-canopy, before flying off. This represents a large range extension of *c.* 1050 km southwest from the previously known locality near the mouth of the Rio Madeira, and suggests that the species is likely also to occur in lowland rainforest in nearby northeastern Bolivia, only *c.* 50 km away.

BLACK-NECKED RED-COTINGA *Phoenicircus nigricollis*

On 29 April I observed and tape-recorded the call of an adult male Black-necked Red-Cotinga. The bird was feeding in the mid-storey of *terra firme* forest about 15 m up, perched on a large horizontal bough. This represents a range extension southwest along the Rio Madeira of *c*. 550 km. It was to be expected; Snow (1982, *The Cotingas*) noted that the apparent absence of the species from Bolivia and southeastern Peru was probably due to insufficient collecting in these countries' lowland forests.

PURPLE-THROATED COTINGA *Porphyrolaema porphyrolaema*

I observed and tape-recorded Purple-throated Cotingas on six different days; all records involved male birds. The nearest known locality is about 200 km northeast at Fazenda Rancho Grande, near Ariquemes (10°17′S, 62°52′W). Although this species has not yet been recorded in nearby Bolivia, Ridgely & Tudor (1994; *The Birds of South America*, Vol. 2) note that it should occur in the extreme northwest. These records indicate that it will probably also be found to occur in northeastern Bolivia.

POMPADOUR COTINGA *Xipholena punicea*

I saw an adult male on 21 April and a female-plumaged bird on the 23rd, and heard another on the 24th. There are very few records of this species from the State of Rondonia and only one locality known from nearby northeastern Bolivia (Ridgely & Tudor, *loc.cit.*).

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ANDREW WHITTAKER

25 July 1995

A NOVEL FORAGING ASSOCIATION BETWEEN SOUTHERN RIVER OTTERS *LUTRA LONGICAUDIS* AND GREAT EGRETS *CASMERODIUS ALBUS*

The association between Cattle Egrets *Bubulcus ibis* and foraging ungulates is well documented and has been subject to detailed investigation (Burger & Gochfeld 1982, *Behaviour* 79: 212–229). A record also exists of an association between a foraging Black Bear and a Cattle Egret (Smith 1985, *Wilson Bull.* 97: 395). However I can find no record in the literature of an association between an egret and an otter. Egret associations are typically terrestrial; for example Cattle Egrets following large terrestrial mammals through vegetation and preying on small organisms flushed from cover.

I report here a foraging association between a Southern River Otter *Lutra longicaudis* and a Great Egret *Casmerodius albus*, observed on four separate occasions at Aviarios del Caribe Nature Reserve, Costa Rica. The only recorded associations between birds and otters in the literature are predation by otters on birds (Vanwagenen *et al.*, 1981, *J. Mammalogy* 62: 433–434) and scavenging by otters and herons on salmon carcasses (Hewson 1994, *J. Zool.* 235: 53–65). The commensal association described below is therefore novel.

The Aviarios del Caribe reserve is located in the Rio Estrella estuary, on the Caribbean coast of Costa Rica. It contains a system of canals and lagoons supporting abundant fish life. The observations reported here were made between 2 and 20 July 1995. Great Egrets were a common sight feeding along the water margins, whilst otters were sighted regularly in the deeper parts of the canals.

It was observed that upon the arrival of an otter in the vicinity of the Great Egret, rather than avoiding the disturbance, the egret walked or flew to an area of shallows immediately adjacent to the foraging otter. The egret then took several prey in rapid succession presumably because small fish had been driven into the shallows by the activity of the otter. On one occasion as the otter moved down the canal the egret followed: this continued for approximately 200 m. I estimate that the egret's success rate was much higher at these times than when stalking prey alone in the shallows.

It is possible that both otter and egret were independently tracking a moving shoal of fish; but considering the egret's primary attraction to disturbed water caused by the otter, this seems unlikely. It was not clear whether the four observations of this phenomenon were of different Great Egrets, or whether the same individual was responsible.

These observations are interpreted as a learned association between the specific disturbance produced by a feeding otter and a local abundance of food. Other disturbances, such as canoe traffic or human weed-cutting, rapidly disturbed egrets, causing them to take flight. This suggests that disturbance *per se* was not attractive to egrets. Commensalism with otters may be a widespread but, until now, unrecorded foraging technique used by the Great Egret.

I am most grateful to the Carlos de Sola Wright Memorial Fund and Merton College, Oxford for providing financial assistance for the expedition during which these observations were made. Thanks also to Nick Grassly for his comments concerning this manuscript.

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ROBERT McCALL

28 November 1995

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the Editor, Dr D. W. Snow, The Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*.

A contributor is entitled to 10 free offprints (16 if 2 or more authors) of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Additional offprints or offprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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Only Members of the British Ornithologists' Union are eligible to join the Club; applications should be sent to the Hon. Treasurer, as below, together with the annual subscription (£8.50 or, if preferred, U.S. $22 for 1996, postage and index free). Changes of address and any correspondence concerning membership should be addressed to the Hon. Treasurer.

SUBSCRIPTION TO THE *BULLETIN* & OTHER PUBLICATIONS

The *Bulletin* (Vol. 116 onwards) may be purchased by non-members on payment of the annual subscription (£22 or, if preferred, U.S. $45 for 1996, postage and index free). Applications should be sent to the Hon. Treasurer. Single issues may be obtained as back numbers.

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Payments should be sent to the Hon. Treasurer, S. J. Farnsworth, Hammerkop, Frogmill, Hurley, Maidenhead, Berks SL6 5NL, U.K., or credited direct to the Club's bank account—No. 10211540, Sort Code 20 00 87, at Barclays Prime Account, Dale House, Wavertree Boulevard, Liverpool L7 9PQ, U.K., with confirmation to the Hon. Treasurer. All payments are net and should be in Sterling if possible. Payment in other currencies must include a further £4 for U.K. Bank Charges (except for annual rates in U.S. Dollars which are inclusive).

CORRESPONDENCE

Correspondence on all other matters should go to the Hon. Secretary, Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA, U.K. For details of Club Meetings see inside front cover.

Registered Charity No. 279583

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

COMMITTEE

Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 116 No. 4 December 1996

FORTHCOMING MEETINGS

Tuesday 21 January 1997. Professor C. J. Feare and Dr Elaine Gill will speak on **"The biology of pink omelettes"**. Chris began studying Seychelles Sooty Terns during an Aberdeen University Research Fellowship in the early 1970s, and never lost interest in these birds or the islands, during an ensuing career with the Ministry of Agriculture's Central Science Laboratory (CSL). There, he studied the biology of pest birds, especially Starlings, but recently took early retirement to establish his own consultancy on bird management, to write books and to continue Sooty Tern studies. Elaine spent thirteen years studying the ecology of free-ranging ponies, on which she has written a book, before joining CSL to investigate the potential of naturally-occurring chemicals to deter birds and mammals from feeding on crops. Despite the absence of horses, she quickly adapted to spending her leave on tropical islands full of Sooty Terns.

Applications to the Hon. Secretary by 7 January, please.

NOTE: The meeting provisionally planned for **25 February** has been cancelled.

Tuesday 18 March 1997. Major Frank Courtenay-Thompson will speak on **"Three years birdwatching in Saudi Arabia"**. Appointed there in 1970 as Military Adviser, Frank set about reviving his childhood enthusiasm for birds, and sought advice and support from among the then very small expatriate population. This resulted in the formation of the Saudi Arabian Natural History Society, and the production of the first bird list for the Kingdom. Together with an American doctor, he built up a collection of photographic slides, totalling over 150 identifiable species.

Applications to the Hon. Secretary by 4 March, please.

Tuesday 8 April 1997. Dr C. J. Hazevoet will speak on **"Birds of Cape Verde Islands"**. Dr Hazevoet has been resident in the Cape Verde Islands for the larger part of the past eight years. He took the initiative for the National Parks and Protected Areas Programme, which has resulted in important sites for seabirds and endemic landbirds being declared Nature Reserves by law, in 1990. His work in the islands includes both scientific research and educational activities. He is a research associate at the Institute for Systematics and Population Biology of the University of Amsterdam and the National Agricultural Research Institute of the republic of Cape Verde.

Applications to the Hon. Secretary by 24 March, please.

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London SW7, at 6.15 p.m. for 7 p.m. The nearest Tube station is at South Kensington, and car parking facilities are available; a map of the area will be sent to members, on request. The cash bar is open from 6.15, and a buffet supper, of two courses followed by coffee, is served from about 7.00. (A vegetarian menu can be arranged if ordered at the time of booking.) Informal talks are given on completion.

Overseas Members visiting Britain are particularly welcome at meetings. For details in advance, please contact the Hon. Secretary, Cdr M. B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA.

Tel/Fax: 01730-825280 for late bookings and cancellations.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 116 No. 4 Published 13 December 1996

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club was held in the Ante-room of the Sherfield Building, Imperial College, London SW7 on Tuesday, 21 May 1996 at 6 p.m. Mr D. Griffin was in the Chair. 18 Members were present.

The Minutes of the Annual General Meeting held on 23 May 1995, which had been published (*Bull. Brit. Orn. Cl.* 115: 193), were approved and signed by the Chairman.

The Report of the Committee for 1995, which had been published (*Bull. Brit. Orn. Cl.* 116: 1–2), was presented. A minor correction was made to the statement concerning Bulletin Sales (page 2), with an amendment to read: "Non-member Subscribers were 134, 17 in the U.K., and 117 overseas". Mrs A. M. Moore proposed, and Mr S. J. Farnsworth seconded acceptance of the Report. This was agreed unanimously. The Chairman thanked Mrs Moore for her tireless work arranging meetings and for ensuring the smooth running of Club affairs, over the past and preceding seven years. Of special value to the Club had been her contribution to the work of the Publications Sub-committee, and for her representation of the Club at international meetings, both in this country and overseas.

The Editor apologised for the exceptional lateness of the December issue of the *Bulletin* 115(4), which had been mainly due to seasonal difficulties over Christmas. He proposed no significant changes, and to keep within the range of 64–72 pages per issue. He had received an encouraging number of papers, especially from neotropical countries, a trend which he thought would continue. But these were mainly short papers and he would welcome a few longer ones. He was normally able to achieve publication within 12 months of receipt. The Chairman thanked the Editor for his report, and for another excellent volume of the *Bulletin* in 1995.

There being no other nominations for these posts, the following were declared re-elected:
Hon. Treasurer: Mr S. J. Farnsworth
Hon. Secretary: Commander M. B. Casement, OBE, RN.

As notified in the AGM Agenda, published in *Bull. B.O.C.* 116(1), the Committee had accepted in full the advice received from the Charity Commissioners. In order that the Editor remain eligible to receive an honorarium for his editorial work, the Committee proposed that:

(i) The editor shall cease to be a trustee of the Club,
(ii) The editor shall attend Committee meetings as necessary to give advice on matters concerning the *Bulletin*, but without the right to vote on any issue,
(iii) Rule (4) be amended accordingly.

No objections had been received, and this proposal was accepted unanimously by all those present.

Amendments to Rules of the Club. In order to implement this change as soon as possible, Members had been notified by means of a leaflet inserted with *Bull. B.O.C.* 116(1), of the Committee's proposed amendment to the Club Rules, as a Special Resolution, in accordance with Rule (18). No objections had been received, and the amendment to the Rules of the Club was proposed by the Chairman, seconded by Revd T. W. Gladwin (Vice-Chairman), and agreed by all those present. (For text of this amendment, see below.)

In anticipation that this resolution would be approved at this AGM, the Committee had proposed that the seat on the Committee vacated by the Editor, be filled by Mr D. J. Montier. There being agreement by all those present, Mr D. J. Montier was declared elected as a Member of the Committee.

Mr S. J. Farnsworth tabled the draft 1995 accounts but said that these were not ready for approval, because the figures required amendment to reflect the recently increased valuation of the Herbert Stevens Trust Fund. In summary, the accounts showed an increased balance over that forecast due to: Trust income, which had exceeded the target figure, good sales of BOC publications, and a small saving in printing costs. Looking to the future, an increase in printing costs for the *Bulletin* was expected. The Committee had agreed to postpone approval of the 1995 accounts until the 19 July meeting, when a specially re-convened AGM would be held at 6 p.m.

In conclusion, the Chairman thanked the Officers and Committee for their support during the year, as well as Dr R. A. Cheke as convener of the Occasional Publications Sub-committee, Mrs Mary Muller for producing the annual Index of the *Bulletin*, Professor Richard Chandler for providing special facilities at Imperial College, Mr Ron Kettle for arranging slide projection at meetings, and Mr Pat Sellars for organising the sound equipment.

No other business had been notified in accordance with Rule 12. The meeting closed at 6.20 p.m.

The Annual General Meeting of the British Ornithologists' Club, adjourned from 21 May 1996, was resumed at 6.15 p.m. on 16 July 1996 in the Senior Common Room, Sherfield Building, Imperial College, London SW7. Mr D. Griffin was in the chair and 14 Members were present.

The Accounts for 1995 were presented by the Hon. Treasurer, who said that the Club finances were in a healthy state, and that publications, especially *Extinct and Endangered Birds in the Collections of the Natural History Museum*, were selling well. He proposed these Accounts be received and adopted. This proposal was seconded by the Revd T. W. Gladwin, and carried unanimously. The Chairman thanked the Hon. Treasurer and the Trustees of the Herbert Stevens Fund for their work, and also Mrs F. E. Warr for her valuable help with sales of back numbers of the *Bulletin*.

No other business had been notified in accordance with Rule 12, and the meeting closed at 6.35 p.m.

Text of agreed Rule changes (changes to the existing rules are underlined.)

BRITISH ORNITHOLOGISTS' CLUB

FOUNDED 5 OCTOBER 1892
Registered Charity No. 279583

TITLE and OBJECTS

The objects of the Club, which shall be called the "British Ornithologists' Club", are the promotion of scientific discussion between Members of the British Ornithologists' Union and others interested in ornithology, and to facilitate the publication of scientific information connected with ornithology.

RULES

Approved by the Annual General Meeting on 21 May 1996.

MANAGEMENT

Delete references to Editor and amend to read (alterations underlined):
(4) (a) There shall be a Management Committee, elected from among the Members, which shall have general control and management of the administration of the Club. This Committee shall consist of a Chairman and a Vice-Chairman, each elected for terms of four years; an Honorary Secretary and an Honorary Treasurer each elected for a term of one year; and five other Members of the Committee, each of whom shall be elected for terms of four years. With the exception of the Honorary Secretary and Honorary Treasurer, the Officers and other Members of the Committee shall be ineligible for re-election within one year to the same office or position . . .
Insert new sub-para:

(b) Sub-committees and other Officers. At the discretion of the Committee:

(i) additional officers may be appointed,

(ii) sub-committees may be formed,

as and when necessary, to act in an advisory capacity for the management of the Club's activities. The Chairman and/or Members of such sub-committees may attend meetings of the Committee, by invitation, as *ex-officio* Members, but without the right to vote on any issue.

'BULLETIN' OF THE CLUB

14. (a)
(b)

Insert new sub-para:

(c) There shall be an Editor of the *Bulletin*, appointed by the Committee for a term of four years. The Editor may receive an annual honorarium for such work, which shall be determined by the Committee from time to time. The Editor may attend any meeting of the Committee, as an *ex-officio* Member, (in accordance with Rule (4b) above) for the purpose of offering advice on all editorial matters, but executive authority rests with the Committee, as Trustees of the Club.

NOTE. The Members of the Management Committee are legally the Trustees of the Club.

The eight hundred and sixtieth meeting of the Club was celebrated with a visit to Selborne on Friday, 31 May 1996. The meeting started at 10.30 a.m. 17 Members and 9 Guests attended.

Members attending were: D. GRIFFIN (*Chairman*), Miss H. BAKER, P. J. BELMAN, Cdr M. B. CASEMENT RN, A. GIBBS, The Revd T. W. GLADWIN, C. A. R. HELM, I. T. LEWIS, N. S. MALCOLM, Dr J. F. MONK, D. J. MONTIER, Mrs A. M. MOORE, Mrs M. MULLER, Dr R. P. PRŶS-JONES, N. J. REDMAN, N. H. F. STONE, M. P. WALTERS.

Guests attending were: Mrs C. CASEMENT, Mrs B. GIBBS, Mrs J. M. GLADWIN, Mrs S. GRIFFIN, Mrs S. LEWIS, Mrs D. C. MONK, Mrs M. MONTIER, P. J. MOORE, Mrs S. STONE.

The Club had originally made arrangements to celebrate its 21st anniversary with a "Selborne Excursion" on Saturday 12 July 1913. Unfortunately in consequence of the death, following a carriage accident, of the Club's Chairman, Dr Philip Sclater, on 27 June, the excursion was cancelled. Eighty-three years later, and in fine weather, the Club arrived in Selborne to visit The Revd Gilbert White's home, *The Wakes*, and other places featured in his classic work *The Natural History of Selborne* which was hugely instrumental in reviving British ornithology.

The Club was kindly welcomed to *The Wakes* by Mrs Anna Jackson. After morning refreshments in the tea parlour, the Director, John Garnett, gave a most informative introductory talk. *The Natural History of Selborne*, he claimed, is the third most published book after *The Bible* and the works of Shakespeare. Further areas of Gilbert White's garden are being restored to include the same species and varieties of plants, some now rare, which he cultivated. Despite efforts to replant it, the Great Yew of Selborne which stood in St. Mary's churchyard for an estimated 1400 years, died after being uprooted by the gale of 25 January 1990. It is being succeeded by a cutting taken from the tree immediately after its fall.

After inspecting the house and gardens, including The Oates Museum, the Club retired for lunch at *The Queens*, formerly *The Queen's Arms Hotel*, where luncheon had been booked in 1913.

Members and guests variously spent the afternoon walking to Selborne Hill and Common, now mostly designated a Site of Special Scientific Interest (SSSI), via the Borstal Paths and Zig-Zag which was made by Gilbert White and his brothers; exploring the village and St. Mary's Church; and enjoying the gardens at *The Wakes*. The magnificent stained glass windows in St. Mary's Church, including the Gilbert White Memorial Window (1920) in which most of the birds referred to in his writings are identifiably represented, were much admired. Gilbert White's grave was also visited by most of the party.

Sparrowhawk *Accipiter nisus* and Hobby *Falco subbuteo* flew overhead, a Nightingale *Luscinia megarhynchos* sang briefly, and Treecreepers *Certhia familiaris* were observed feeding young in the dead trunk of the Great Yew.

The meeting finished with afternoon tea back in the tea parlour at *The Wakes* and a vote of thanks to John Garnett and his staff for their kind hospitality.

Members and guests who attended the meeting each received a specially bound copy of a *Guide to Selborne* and *Synopsis of the Life of Gilbert White* which had been prepared for the 1913 excursion by Major W. H. Mullens and was published in October of that year as *Bulletin* CXC (Vol. XXXIII:1–27).

The eight hundred and sixty-first meeting of the Club was held on Tuesday, 18 June 1996 at 6.15 p.m. 20 Members and 12 Guests attended.

Members attending were: D. GRIFFIN (*Chairman*), P. D. GORIUP (*Speaker*), M. A. ADCOCK, Miss H. BAKER, Mrs D. M. BRADLEY, Cdr M. B. CASEMENT RN, Professor R. J. CHANDLER, Dr R. A. CHEKE, D. J. FISHER, A. GIBBS, Revd T. W. GLADWIN, R. H. KETTLE, Dr C. F. MANN, Dr J. F. MONK, D. J. MONTIER, Mrs A. M. MOORE, R. G. MORGAN, Dr R. P. PRŶS-JONES, N. H. F. STONE, Professor W. E. WATERS.

Guests attending were: Mrs C. R. CASEMENT, D. COUZENS, Mrs F. FARNSWORTH, Dr D. FOSKETT, Mrs S. GRIFFIN, Mrs J. M. GLADWIN, Mrs BRENDA HAMMOND, Mrs D. C. MONK, Mrs M. MONTIER, P. J. MOORE, Mrs S. L. STONE, D. WATERS.

After supper Paul Goriup, who is Chairman of the Steppe and Grassland Bird group of BirdLife International and IUCN—the World Conservation Union, spoke about his favourite subject: "The beauty of bustards", illustrated with a splendid series of colour slides showing the wide range of their spectacular courtship displays.

The bustards (Otididae) form a distinctive family of birds loosely related to rails and cranes (Gruiformes). They occur (or occurred) throughout most of the Old World where there are steppe and steppe-like habitats, especially in Africa, which is the centre of speciation and dispersion. The family includes the world's heaviest flying landbirds as well as species no larger than a partridge. That the 22 or so species fall into eight genera, of which five are monospecific, testifies to the diversity of form (and indeed of behaviour) that is found in such a relatively small family.

Six bustard species are known to be threatened. By far the most important cause for the overall decline of bustard numbers and fragmentation of their distribution is loss of habitat, especially from gradual degradation of steppic vegetation through overgrazing, overburning and intensifying cultivation. Other, often terminal, causes of bustard declines are hunting (shooting and falconry), trapping, and any forms of disturbance which interrupt their display or breeding activities.

Future conservation measures for bustards will revolve around habitat protection and restoration, research (including rearing and releasing captive-bred birds into restored habitats), reduction of persecution, and enhanced public awareness of the birds and their habitats.

The eight hundred and sixty-second meeting of the Club was held on Tuesday, 16 July 1996 on conclusion of the adjourned Annual General Meeting, at 6.30 p.m. 24 Members and 18 Guests attended.

Members present were: D. Griffin (*Chairman*), Dr R. Wilkinson (*Speaker*), Miss H. Baker, P. J. Belman, I. R. Bishop, D. R. Calder, Cdr M. B. Casement RN, Dr R. A. Cheke, S. J. Farnsworth, Professor C. J. Feare, G. D. Field, A. Gibbs, Revd T. W. Gladwin, R. H. Kettle, Dr C. F. Mann, D. J. Montier, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, S. J. Parry, Dr R. P. Prŷs-Jones, R. E. Scott, R. E Sharland, N. H. F. Stone.

Guests attending were: Miss G. Bonham, Mrs J. B. Calder, Mrs C. R. Casement, Dr E. Gill, Mrs J. M. Gladwin, Mrs M. Montier, P. J. Moore, S. Tonge.

After supper Roger Wilkinson, who is currently Curator of Birds at Chester Zoo and Secretary of the West African Ornithological Society, spoke about "Zoo breeding programmes for endangered species". The following is a brief synopsis of his talk.

Zoos are increasingly working with threatened species, and the World Zoo Conservation Strategy makes conservation their main mission. With millions of visitors each year, zoos are in a unique position to influence public opinion, and conservation education is another priority. Thirdly, zoos are increasingly involved with scientific research on endangered species both in the wild and in the zoo. Zoo-based breeding programmes are not an alternative to conservation in the wild. For some threatened species, zoo breeding is inappropriate; but for others it is an essential element of the conservation recovery programme.

Dr Wilkinson gave an illustrated overview of breeding programmes for endangered birds including examples from waterfowl, ibis, cranes, pheasants, pigeons and parrots. Money raised within zoos is being used for field conservation work for many threatened parrot species including the critically endangered Red-vented Cockatoo and the Mauritius Parakeet. Waldrapp Ibis, now numbering perhaps less than 170 in the wild, have a zoo population of over 1700. A science of reintroduction is beginning to emerge. This needs to be further developed with, for example, controlled experimental releases, varying different parameters that may affect the success of reintroduction. Examples were given of research on releases of Waldrapp Ibis and Siberian Cranes.

Husbandry techniques need to be developed for the maintenance and breeding of some bird species. The Hawaiian Bird Programme, involving five USA zoos, is one example of a programme where zoos are now developing husbandry skills with "surrogate" species on which programmes for endangered birds could be based. Andean Condors similarly served as a model for the Californian Condor. From eight Californian Condors taken from the wild in 1980 a population of 89 birds had been established by 1994. By that time 13 Californian Condors had already been released into the wild.

Examples of birds currently being maintained in zoos, but extinct in the wild, include the Guam Rail and Guam Kingfisher. Both are extinct on Guam because of predation by the introduced Brown Tree Snake. Experimental reintroduction of the Guam Rail is now taking place on the nearby snake-free island of Rota.

The aim of conservation breeding programmes is to support wild populations and not to offer an alternative to conservation in the wild. Forward-thinking zoos are working to become further integrated with the global network of conservation organisations.

The eight hundred and sixty-third meeting of the Club was held on Tuesday, 17 September 1996 at 6.30 p.m. 18 Members and 7 Guests attended.

Members present were: D. Griffin (*Chairman*), J. W. Barrington, P. Bull, D. R. Calder, Cdr M. B. Casement RN, S. J. Farnsworth, D. J. Montier, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, P. J. Oliver, R. E. F. Peal, Dr R. P. Prŷs-Jones, R. E. Scott, P. J. Sellar, Dr D. W. Snow, N. H. F. Stone, Professor W. E. Waters.

Guests attending were: R. Prytherch (*Speaker*), Mrs J. C. Bull, Mrs J. B. Calder, Mrs M. Montier, P. J. Moore, Mrs M. Oliver, Dr P. Rasmussen.

After supper, Robin Prytherch gave an illustrated talk entitled "Buzzards in Avon—a success story", of which the following is a synopsis.

The study commenced in the early 1980s whilst organising a survey of breeding Buzzards in Avon for the Bristol Ornithological Club. This survey spanned 1980–84, with many sites checked in only one of those years, so a study site (of 75 km^2) was selected as a control to check if the population there was increasing, stable or decreasing (the first was suspected). The habitat was mainly of mixed woodland and fields, both pasture and arable. This provided many suitable nest-sites and an abundant supply of food—of young rabbits, small rodents and birds, and invertebrates (mainly earthworms) in winter. The presence or absence of all pairs in this area was checked, and new pairs were looked for in each year.

By the time this survey was completed, he had become so absorbed by the birds in this study area that he decided to look more closely at their social behaviour, especially in the air. He demonstrated examples, using an excellent series of slides of his field-sketches, since these activities are very difficult to photograph. By close study of differing, often distinctive, plumage patterns, it became possible to differentiate, not only between male and female adults, and first-year birds, but also to recognise many individuals, and thus to determine the differing behaviour and inter-relationships between each.

Breeding pairs of Buzzards are very territorial and exclude intruders, often chasing them out with much vigour. The territory holders use a variety of displays, before, during and after these encounters. This study revealed interesting behaviour activities, which have not previously been described. Present literature suggests that aggression is between pairs, but this is rarely so; non-breeding intruders are the stimulus for aggression and displays. By many hours of watching and recording these behaviour patterns, it was possible each year to construct a map of all the territories and the numbers present, and a dramatic build-up of the population was observed. From 12–13 pairs in 1982, numbers increased to 17 pairs in 1984, and 26 pairs in 1991. Thereafter, numbers increased by six pairs each year to reach 44 pairs in 1994, 52 pairs in 1995 and 56 pairs in 1996. The 1996 figure is equivalent to 1.3 km^2 per pair, one of the densest populations ever recorded in the UK.

Productivity over the last eight years has declined from about 1.5 chicks per pair (all pairs) to about 1.0 chick per pair. Productivity of successful pairs has also declined, but not so markedly. Territory size and nest spacing have both decreased so that, as density has increased, productivity has declined. A study of individual lifetime productivity revealed that this varied widely; in long-lived birds it has ranged from 8 to 27 fledged chicks. One female, which lived for 16.3 years, fledged at least 16 chicks with four mates.

British Ornithologists' Club
Financial statements for the year ended 31 December 1995

Statement of Committee Members' responsibilities

The Committee is required to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the Charity at the end of the financial year and of the surplus or deficit for that period.

In preparing the financial statements, suitable accounting policies have been adopted and consistently applied to the best of the Committee's knowledge and belief, by reference to reasonable and prudent judgements and estimates. Applicable accountancy standards have been followed.

The Committee members are responsible for maintaining adequate accounting records for safeguarding the assets of the Charity and for preventing and detecting fraud and other irregularities. The Committee members are also required to indicate where the financial statements are prepared other than on the basis that the Charity is a going concern.

Income and Expenditure Account for the year ended 31 December 1995

	1995		1994	
	£	£	£	£
INCOME				
Subscriptions				
Members	4,893		5,032	
Non-member subscribers	2,762		3,002	
Inland Revenue tax recovered				
(Deeds of Covenant: subscriptions)	311		346	
		7,966		8,380
Donations		20		31
Investment income				
H. Stevens Trust Fund	7,090		5,931	
Barrington Trust Fund (COIF Income Shares)	36		34	
Interest received:				
Barclays Prime Account	125		95	
COIF Deposit Account No. 1	2,561		1978	
		9,812		8,038
Publications				
BOC Bulletin:				
Back numbers	469		912	
Offprints	226		130	
Colour photos etc (contributions)	583		—	
Inserts	55		—	
"Avian Systematics and Taxonomy"	1,155		742	
"Birds, Discovery and Conservation"	134		102	
"Extinct and Endangered Birds"	1,458		2,259	
		4,081		4,145
Cost of sales				
Opening Stock	(100)		(100)	
Closing Stock	100		100	
		—		—
Meetings				
Ordinary Meetings	3,470		4,327	
Centenary Dinner	8		6	
		3,478		4,333
Miscellaneous income				
Club ties	67		107	
Club brooches	167		524	
Miscellaneous	40		269	
		274		900
TOTAL INCOME		25,631		25,827
EXPENDITURE				
Subscription recruitment		245		112
Meetings				
Ordinary Meetings: Restaurant/Room Hire	3,296		4,411	
Speakers/Notices etc	372		259	
Bar facility charges	254		286	
		3,922		4,956
Bulletin BOC				
Publication and printing	8,140		10,695	
Addition offprints	386		415	
	8,526		11,110	
Editor's Honorarium	850		800	
Editorial and secretarial expenses	111		108	
Address labels	498		440	
Postage/packing	1,648		1,187	
		11,633		13,645
"AVIAN SYSTEMATICS AND TAXONOMY"				
Publication and printing	—		167	
Notices	—		69	
Postage	31		34	
		31		270

"BIRDS, DISCOVERY AND CONSERVATION"				
Postage		2		5
"EXTINCT AND ENDANGERED BIRDS"				
Publication and printing	—		2,628	
Editorial expenses	—		108	
Notices	—		82	
Postage	76		294	
	76		3,112	
Reimbursible BEF Loan	1,000		(1,000)	
		1,076		2,112
Future publications		36		—
Committee administration				
Postage	492		343	
Stationery and printing	614		400	
Secretarial	157		234	
Telephone	212		105	
Travel	146		21	
		1,621		1,103
Depreciation (Projection equipment)		10		10
Miscellaneous				
Public liability insurance	133		130	
Accountancy fees: ordinary funds	646		950	
Herbert Stephens Trust Fund	141		120	
Legal advice: Herbert Stephens Trust Deed	317		—	
Bank charges	14		19	
Credit card charges	116		65	
Miscellaneous	128		65	
Bulletin back numbers	—		65	
Club brooches	—		742	
Publications Fund: Notices	11		—	
		1,506		2,156
TOTAL EXPENDITURE		20,082		24,369
Excess of Income over Expenditure		5,549		1,458

Balance Sheet as at 31 December 1995

General Fund				
Balance at 1 January 1995	34,354		32,896	
Surplus of Income over Expenditure	5,549		1,458	
Balance at 31 December 1995		39,903		34,354
J. Barrington Trust Fund				
Balance at 1 January 1995 and at 31 December 1995		577		577
Herbert Stevens Trust Fund				
Balance at 1 January 1995	143,841		144,953	
Transfer adjustment to BOC	—		(17)	
Increase on revaluation	10,321		—	
Surplus/(Deficit) of income over expenditure being net profit on the sale of investments for year ended 31 December 1995	8,629		(1,095)	
Balance at 31 December 1995		162,791		143,841
		203,271		178,772
Publications fund				
Balance at 1 January 1995	—		—	
Surplus of Income over Expenditure	3,330		—	
Balance at 31 December 1995		3,330		—
		206,601		178,772

Represented by:

J. Barrington Trust Fund				
111.57 COIF Charities Investment Fund Income Shares—at cost (Market value 31/12/95 £810; 31/12/94 £710)	577		577	

Herbert Stevens Trust Fund				
NCL Fund Managers		162,791		143,841
Publications Fund				
COIF Charities Deposit Account No 2		3,330		—
Fixed Assets				
Projection Equipment		60		70
Current Assets				
Stock of publications	100		100	
Cash in hand	38		40	
Cash at bank:				
Barclays Prime Account	2,642		5,702	
COIF Charities Deposit Account No 1	45,576		39,979	
Sundry Debtors	782		370	
		49,138		46,191
Current Liabilities				
Subscriptions received in advance:				
Members	2,674		2,009	
Non-Member Subscribers	1,510		620	
Sundry Creditors	5,111		9,278	
		(9,295)		(11,907)
		206,601		178,772

NOTES TO THE ACCOUNTS

1. *ACCOUNTING POLICIES*

(1) Basis of Accounts

The financial statements are prepared under the historical cost convention.

(2) Depreciation

Depreciation is calculated to write off fixed assets over the expected useful lives, by reference to original cost or subsequent valuation.

(3) Stock

Stock is valued at the lower cost and estimated net realisable value.

2. *PUBLICATIONS FUND*

	1995	1994
	£	£
Donations	2,400	—
Inland Revenue Tax Recovered	800	—
Gross Interest (COIF 2)	130	—
	3,330	—

3. *REVALUATION*

For the purposes of bringing the accounts forward towards conformity with new accounting practices for Charity Accounts, to be introduced in full after 31 March 1996, the Herbert Stephens Trust Fund investments have been restated at their valuation as at 31 December 1995, rather than historic book cost, hence the figure of £10,321 for the increase in value of the investments on the balance sheet.

HERBERT STEVENS TRUST FUND

Balance sheet as at 31 December 1995

	1995	1994
	£	£
General Fund Assets		
Investments at Cost	121,534	142,904
Increase on Revaluation	10,321	—
Market Value of Investments* (1994: £144,042)	131,855	142,904
Current Assets		
Midland Bank SARA	30,936	937
	162,791	143,841

*A number of investments were sold during the year the proceeds of which remain uninvested.

	1995	1994
	£	£
General Fund		
Balance at 1 January 1995	143,841	144,953
Withdrawn by BOC	—	(17)
Increase on Revaluation	10,321	—
Surplus/(Deficit) of Income over Expenditure being net profit on the sale of Investments for the year ended 31 December 1995	8,629	(1,095)
Balance as at 31 December 1995	162,791	143,841

INDEPENDENT EXAMINER'S REPORT TO THE COMMITTEE MEMBERS OF THE BRITISH ORNITHOLOGISTS' CLUB

We report on the accounts of the Charity for the year ended 31 December 1995.

RESPECTIVE RESPONSIBILITIES OF TRUSTEES AND EXAMINER

As the charity's trustees you are responsible for the preparation of the accounts; you consider that the audit requirement of section 43(2) of the Charities Act 1993 (the Act) does not apply. It is our responsibility to state, on the basis of procedures specified in the General Directions given by the Charity Commissioners under section 43(7)(b) of the Act, whether particular matters have come to our attention.

BASIS OF INDEPENDENT EXAMINER'S REPORT

Our examination was carried out in accordance with the General Directions given by the Charity Commissioners. An examination includes a review of the accounting records kept by the charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items or disclosures in the accounts and seeking explanations from you as trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit, and consequently we do not express an audit opinion on the view given by the accounts.

INDEPENDENT EXAMINER'S STATEMENT

In connection with our examination, no matter has come to our attention;

(1) which gives us reasonable cause to believe that in any material respect the requirements
—to keep accounting records in accordance with section 41 of the Act; and
—to prepare accounts which accord with the accounting records and to comply with the accounting requirements of the Act
have not been met; or

(2) to which, in our opinion, attention should be drawn in order to enable a proper understanding of the accounts to be reached.

DONALD REID & CO
Chartered Accountants

Prince Albert House
20 King Street
Maidenhead
Berks
12 June 1996

Approved by the Committee on 16 July 1996
D. GRIFFIN, Chairman

The financial statements presented here are a condensed version of the fully detailed accounts for the year ended 31 December 1995, a copy of which may be obtained on request from the Honorary Treasurer.

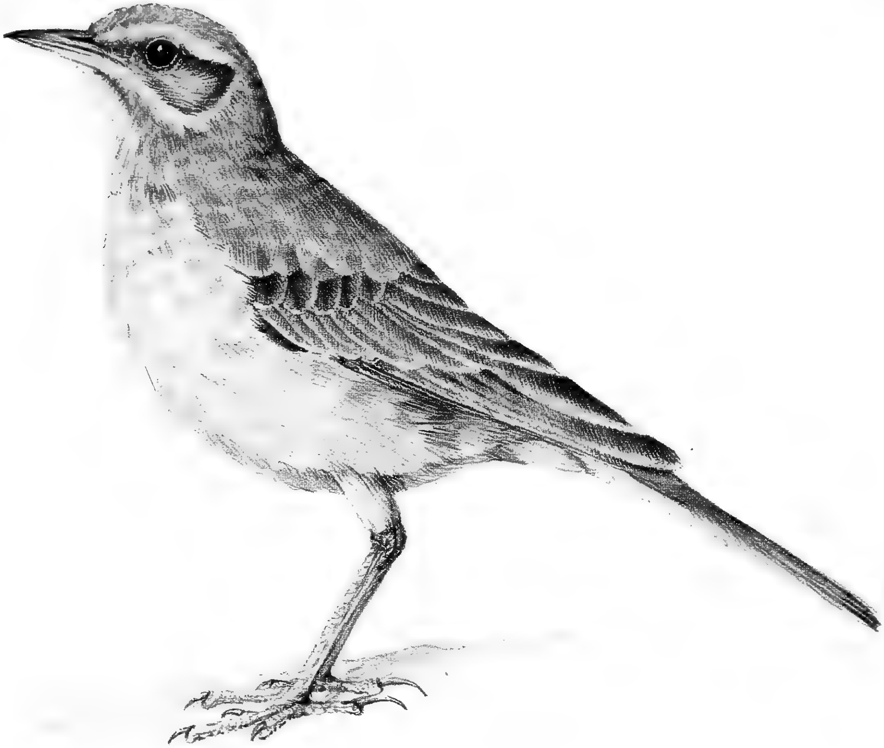

Plate 2. The Long-tailed Pipit *Anthus longicaudatus* illustrated by Jill Adams showing, in addition to plumage characters, the alert stance with shortish beak, long tail noticeably long tarsus and short hind claw.

A new species of pipit in southern Africa

by Richard Liversidge

Received 2 November 1995

The identification of the 43 species of pipits (Sibley 1994) of the genus *Anthus* remains fraught with difficulties. Sharpe (1885) drew attention to the emargination of the primaries as a method of identifying museum study skins to species. Shelley (1900) and Stark (1900) used the length of the hind claw as the first character in their keys for identifying pipits. More recently Hall & Moreau (1970) grouped plain-backed pipits separately from the streaked-backed pipits. Keith *et al.* (1992) have used a different system based on the length and emargination of the primaries as well as the colouring of the back. Needless to say, these museum methods are not of great help in field identification.

In the early 1990s it began to be noticed in the Kimberley area of South Africa that during the austral winter unusual pipits appeared in flocks of 10–40 birds, sometimes in mixed flocks with local pipits (Buffy Pipit *A. vaalensis*, Grassveld Pipit *A. cinnamomeus*, Long-billed Pipit *A. similis*). These flocks were observed on the playing fields of the town of Kimberley and on surrounding farms. It was assumed that the puzzling new birds might have been migratory Mountain Pipits *Anthus hoeschi* en route from the Lesotho highlands to Namibia and north.

In July 1994 two specimens of the new pipit were collected for identification. They were subsequently shown to Dr P. A. Clancey and Dr A. Berruti of the Durban Museum, who both expressed the opinion that they might well represent a new species and were certainly not Mountain Pipits. In August 1995 a further two specimens were collected at the same time as specimens of *A. vaalensis*, *A. similis* and *A. cinnamomeus* from the same field. Tissue samples from each were preserved for molecular analysis in an ongoing study of the genus *Anthus* by Gary Voelker of the Burke Museum, Seattle.

With four specimens it became possible to make a more detailed comparison of these birds with pipits known from the region. Their measurements and other characters showed that they were distinct from any other pipit. The birds were distinguishable in the field from other pipit species by their different stance and feeding behaviour. I propose to name them

Anthus longicaudatus sp. nov.

Syntypes. MMK/B/2549, male, 7 August 1995, Kimberley, South Africa (to be housed in the McGregor Museum, Kimberley). MMK/B/2550, female, 7 August 1995, Kimberley, South Africa (to be presented to the Natural History Museum, Tring, U.K.).

Paratypes (to be housed in the McGregor Museum, Kimberley). MMK/B/2544, male, 13 July 1994, Kimberley. MMK/B/2545, female, 13 July 1994, Kimberley.

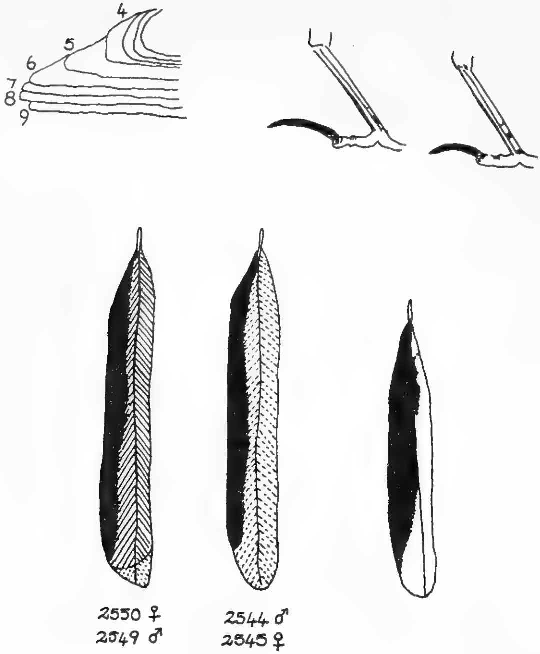

Figure 1. Upper left: wing-tip of *Anthus longicaudatus*, showing differences from *A. vaalensis* and *A. leucophrys* (9th primary equal to 6th and not same length as 7th and 8th as in those two species). Upper right: Hind claw of *A. vaalensis* (left) and *A. longicaudatus* (right). Below: Outer tail-feather of the syntypes (left) and paratypes (right) of *A. longicaudatus* (hatched=buff, spotted=cream-coloured), compared with the white-edged and tipped outer tail-feather of *A. cinnamomeus*.

All specimens were collected in Keeley Park (28°45′S, 24°47′E), within Kimberley, by C. Anderson, B. Wilson and R. Liversidge of the McGregor Museum. Samples of blood and tissues from the syntypes are preserved in buffer solution and are housed in the McGregor Museum and Burke Museum, Seattle.

Diagnosis. Distinguished from other similar pipits recorded in the Afrotropical region by the following characters. (1) Plain, darkish brown back. The only other two plain-backed pipits in the region have sandy brown (*A. vaalensis*) and rather olive-brown (*A. leucophrys*) backs; the latter is not known from the Kimberley area. (2) Distinguished from *A. vaalensis* and *A. leucophrys* also by its short hind claw (Fig. 1). (3) Distinguished from *A. vaalensis* and *A. leucophrys* by the length of the 9th primary, which is equal to the 6th primary, not to the 7th and 8th as in those two species (Keith *et al*. 1992). (4) Long, dark and 'heavy' tail with square end; pale outer tail margins (Fig. 1) conspicuous when shown but not always visible. (5) Horizontal stance and wagging of tail, reminiscent of wagtails *Motacilla*. Despite its longer tarsus, the length of the tail does not facilitate the upright stance

TABLE 1

Mean measurements (mm) of *Anthus longicaudatus*, the two plain-backed pipits *A. vaalensis* and *A. leucophrys*, and the two common pipits of the Kimberley area which have streaked backs, *A. similis* and *A. cinnamomeus*

	Mass (g)	Wing	Tail	Tarsus	Bill			Hind claw
					length	width	depth	
	♂, ♀	♂, ♀	♂, ♀	♂, ♀	♂, ♀	♂, ♀	♂, ♀	♂, ♀
longicaudatus (4)	31.8	106, 97.3	81.5, 81.5	32.0, 31.8	15.3, 16.0	5.8	4.9	8–9
vaalensis (19)	27.0	106, 101	78.1, 74.1	30.1, 29.4	19.4, 19.1	4.8	4.5	8–12
leucophrys (6)	23.2	97.2, 95.1	67.2, 64.0	30.6, 29.5	18.7, 17.9	—	—	11–17
similis (10)	23.0	99.0, 93.6	71.3, 69.2	26.3, 26.4	19.4, 19.0	5.1	4.4	7–11
cinnamomeus (10)	23.5	90.9, 86.0	62.5, 59.3	26.8, 25.7	17.2, 16.7	5.1	—	11–15

TABLE 2

Relative proportions (based on mean male measurements, Table 1) of *Anthus longicaudatus*, compared with the four common pipits of the Kimberley area, accounting for the different impressions given by these five species in the field

	tail-length/ wing-length	wing-length/ mass	bill-length/ mass	hind claw length/ tarsus
longicaudatus	0.77	3.33	0.48	0.25
vaalensis	0.74	3.93	0.72	0.33
leucophrys	0.69	4.19	0.81	0.46
similis	0.72	4.30	0.84	0.34
cinnamomeus	0.69	3.87	0.73	0.49

that is characteristic of *A. vaalensis* (Keith *et al.* 1992). (6) Measurements greater than those of similar pipits (wing-length, tail-length, greater body mass). The bill, however, is appreciably shorter than in some other pipits (Table 1). In comparison with the other local pipits with which it associates, it is generally a darker brown bird with a heavier build, and also has a less upright stance. The underparts are paler buff than in *A. vaalensis*, with darker flanks; the streaking on the breast present but variable.

Voice. Distinct from that of other pipits in the area. A single note is uttered when flying off. Sonagrams made from tape-recordings, while not of high quality, show that this note has a frequency range of 3.8–5.8 kHz, and is uttered at intervals of *c.* 1.6 sec. The other two plain-backed pipits have a dissyllabic call note. The call notes and songs of *A. vaalensis*, *A. cinnamomeus*, *A. similis* and *A. leucophrys* were played without eliciting any response from the new species. The first three of the above-mentioned species responded to varying degrees to recorded calls of their own species.

English name. I suggest Long-tailed Pipit, in recognition of its most obvious structural character.

Comparison of size and proportions with other African pipits

Table 1 shows the mean measurements of *Anthus longicaudatus* compared with those of the two plain-backed pipits *A. vaalensis* and *A. leucophrys*, and the two other common pipits of the area which have streaked backs, *A. similis* and *A. cinnamomeus*. Table 2 summarises the relative proportions of these five species. From these figures it can be seen that the pipit nearest *longicaudatus* in measurements is *A. vaalensis*, but the bill is shorter and heavier, and the hind claw appreciably shorter in the new species. The tail, although not much longer in measurement, gives the impression in the field of being longer; it is broad and square at the end, not narrow and rounded as in *vaalensis*.

A comparison of the new pipit with the information from Clancey (1990) and Keith *et al*. (1992) for all the African species of *Anthus* (these two authorities do not recognise the same number, as two recognised by the former are considered races by the latter) brings out the following points.

Mass. *A. lineiventris* is the only pipit that is heavier; *campestris* is as heavy, and *vaalensis* and *hoeschi* are almost as heavy. Of these only *vaalensis* is plain-backed.

Wing-length. *A. vaalensis* is similar in length; all others are shorter. Keith *et al*. (1992) give the general measurement of male *vaalensis* as 102–110 mm, but for *A. v. neumanni* (the largest race according to Clancey 1990) they give 94–101 mm; for *neumanni* Clancey gives 100–108 mm.

Tail-length. All other pipits have shorter tails. That of *vaalensis*, the nearest, is *c*. 3.5 mm shorter; the next is *similis* which is *c*. 10 mm shorter.

Tarsus-length. *A. pallidiventris* is the only pipit with a longer tarsus; it is plain-backed too, but its wing is *c*. 7 mm shorter, tail *c*. 12 mm shorter, bill *c*. 4.7 mm longer and hind claw *c*. 5 mm longer.

Bill-length. Only the smaller pipits, *caffer* and the Palaearctic migrants *pratensis* and *cervinus*, have bills of similar length.

The tail/wing ratio shows why the Long-tailed Pipit appears long-tailed in flight. The low ratio of wing-length to mass suggests heavy flight (and perhaps that the species is not a long-distance migrant). The very low ratio of bill-length to mass accords with the observation that this species forages with its head much closer to the ground than the other species. The very low ratio of hind claw length to tarsus suggests that the new species is adapted to shorter-grassed or bare terrain, whereas the other species prefer moister conditions.

Breeding and migratory status

All birds collected were in fresh plumage, which suggests that a post-breeding moult had recently been completed. The gonads were minute. The fact that they were usually seen in flocks would indicate that they were migrants. They all had subcutaneous fat and internal fat layers in the body cavity. It is not known from where they had come, but it seems likely to have been from somewhere north of Kimberley.

Concluding remarks

This new species appears already to have caused some confusion in the literature. The most recent field guide to birds of the region, *Sasol Birds of Southern Africa* (Sinclair *et al.* 1993), states for the Buffy Pipit *A. vaalensis*: "on the ground behaves like a wagtail, stops often and moves its tail up and down". This is a good description for the Long-tailed Pipit. All other published descriptions of the Buffy Pipit include a statement that it typically stands bolt upright (e.g. Keith *et al.* 1992, Maclean 1993). Unfortunately the illustration in Sinclair *et al.* (1993) is stylised, as is Clancey's (1990), and does not show the natural upright stance of the Buffy Pipit, well illustrated in Newman (1983). The difference of stance and feeding behaviour between the Long-tailed and Buffy Pipits makes it very easy to distinguish between them in the field. Plate 2 gives an accurate impression of the bird's appearance, based on the collected specimens and field sketches.

The author feels confident of the allocation of this pipit to a new species, but much more needs to be found out. In the Kimberley area the bird is now becoming locally well known. It seems desirable to name it formally, and to alert ornithologists in this and adjacent regions to the possible occurrence of migratory or breeding individuals. It is hoped that a fuller account will eventually be published, including DNA comparisons with other pipits.

Acknowledgements

I would like to thank Dr P. A. Clancey and Dr A. Berruti for their initial suggestions about the new species; M. Anderson and Dr W. Sinclair, who joined in some of the original observations and agreed that this pipit was not one known from our region; C. Anderson and B. Wilson for assistance in collecting and preparing the specimens; Jill Adams for a fine illustration; David Snow for editorial help; and Gary Voelker for comments.

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Observations on the nesting behaviour of the Bar-bellied Pitta *Pitta elliotti*

by Jonathan C. Eames

Received 26 October 1995

The Bar-bellied Pitta *Pitta elliotti* is a highly distinctive species which is endemic to Cambodia, Laos, Thailand and Vietnam (Delacour & Jabouille 1931, Lekagul & Round 1992). In Vietnam, Bar-bellied Pittas inhabit lowland broad-leaved evergreen and broad-leaved semi-evergreen forests up to 800 m asl, where they have recently been shown to be common and widespread in primary, logged and secondary forests and consequently are not believed to be of conservation concern (Eames *et al.* 1992). Accordingly, the species is no longer assigned an IUCN category of threat but has been retained as a near-threatened species (Collar *et al.* 1994). Aside from this rudimentary understanding of the species' range, habitat and status, its biology and nesting behaviour have remained undescribed in the literature.

Study site and methods

The study was conducted between 2 and 28 June 1995 in lowland broad-leaved evergreen forest at 50–300 m asl, in the proposed Ke Go Nature Reserve (18°07′N, 105°55′E) in Ha Tinh Province and in contiguous forest in adjacent Quang Binh Province in central Vietnam. Four nests were discovered quite incidentally whilst undertaking ornithological and botanical surveys. They were identified as being those of *P. elliotti* either by the direct observation of the species at the nest, as in the case of nests 1, 2 and 4, or observation of adults close to the nest, as in the case of nest 3. I was able to make observations only at irregular intervals, and so could not collect data systematically. However, a small hide constructed with natural vegetation was built 4 m from nest 1 on 25 June, from which I made 12 hours of continuous observations on 27 June. Observations were made using 8 × 42 binoculars and the viewfinder of a camera mounted with a 70-210 mm lens, and almost every nest visit was photographed (Figures 1–4).

Results

Nests

Four nests were discovered, of which three were active. Nest 1 was found on 2 June, situated in the apex of the branching fronds of a palmate palm *Licuala* sp., 7 m from a logging track, 13 m from a small forest clearing and 15 m from a forest stream. The nest was a dome constructed with small twigs, dry dicotyledonous leaves and leaf skeletons. It was lined with finer material particularly leaf veins 50–70 mm in length, many of which were tentatively identified as belonging to the Papilionaceae. Additionally, the nest was lined with

TABLE 1
Nest-sites of *Pitta ellioti*

Nest no.	Forest status	Canopy height (m)	Altitude (m asl)	Slope (degrees)	Site aspect	Distance from forest edge (m)
1	Secondary	15	240	3–4	East	13
2	Primary	20	300	15	South-west	>100
3	Secondary	12	180	1–2	North-east	3
4	Secondary	20–22	180	1–2	North-west	>100

fine 'rootlets' up to 130 mm in length, perhaps belonging to the fern *Lygodium* sp. Nest 2 was discovered on 3 June; it too was situated in the apex of the branching fronds of a palmate palm *Licuala* sp., and was located within 1 m of a forest trail. Again, the nest consisted of a dome and was constructed from dry palm *Licuala* sp., rattan *Calamus* sp. and bamboo Bambusoideae leaves. It was lined with similar material to the first nest. Nest 3, discovered on 8 June, was built in a rattan *Calamus* sp., within 3 m of an old logging road. The nest consisted of a steep-sided bowl and lacked a roof. It was constructed from dry dicotyledonous, palm *Licuala* sp. and rattan *Calamus* sp. leaves, and lined with leaf veins. Nest 4 was discovered on 7 June and was built amongst both living and dead rattan *Calamus* sp. stems, through which a palmate palm *Licuala* sp. was growing, within 1 m of a forest trail. Like the first two nests, it was domed. For full details of nest site and dimensions, see Tables 1 and 2.

Eggs

On 2 June nest 1 was freshly lined and was empty; by 11.30 hrs on 3 June it contained a single egg. During the afternoon of 8 June I flushed the female off the nest which was then found to contain two warm eggs. The eggs measured 29 × 22 and 29 × 23 mm. Both eggs were creamy white, speckled with chestnut. On 3 June nest 2 contained four ovate eggs. All four eggs measured 29 mm in length, three measured 25 mm at their widest point and one 24 mm. The eggs were creamy white; two were entirely unmarked, whilst two had indistinct brown speckles at their broad end. On 7 June nest 4 contained three eggs, but their size and coloration was not noted at the time. On inspecting the nest on 9 June the remaining egg was white, covered with brown blotches, and measured 28 × 22 mm.

Nest attendance

During 12 hours of uninterrupted observation of nest 1 on 27 June, the pair visited the nest 40 times, comprising 23 lone visits by the female, 15 lone visits by the male, and one visit by the pair together. The male twice visited the nest but neither brought food nor removed faecal sacs. On both occasions he looked into the nest as if inspecting the contents. The female made only one such visit. At 08.28 hrs

TABLE 2
Features and dimensions of *Pitta elliotti* nests

Nest no.	Site and height (m)	Shape	Height from ground (m)	Depth × width × height (mm)	Entrance (mm) width × height, aspect	Platform length × width (mm)	Chamber depth × width (mm)
1	*Licuala* sp. c. 2 m	dome	1.32	140 × 180 × 230	110 × 70–90 SW	150 × 120	140 × 130
2	*Licuala* sp. 2.5 m	dome	1.68	200 × 190 × 220	100 × 100 NE	130 × 60	150 × 100
3	*Calamus* sp.	cup	1.75	— × 350 × 170	N/A E	160 × 100	110 × 120
4	*Calamus* sp. 3 m	dome	1.65	210 × 260 × 180	100 × 60 SW	90 × 120	

two Rufous-throated Fulvettas *Alcippe rufogularis* visited the palm in which the nest was located. Neither adult was at the nest. One of them, which was not visible but in the vicinity, reacted by giving the subdued *weo* call (see below) but did not approach the nest.

Nest predation

At 06.30 hrs on 27 June nest 1 was visited by a Northern Tree Shrew *Tupia belangeri*. The tree shrew approached the nest from the ground and climbed the stem of the palm, at first by-passing the nest entrance but then finding its way onto the roof of the nest. It then descended to the front of the nest, entered it, and almost immediately began devouring a living pullus from the seclusion of the nest chamber.

Nest 3 was checked for only the second time on 28 June, when it was found to be partially destroyed and not in use. There was no evidence that this nest had been used for nesting during the survey period. By 28 June nest 4 contained merely the decomposed heads of two pulli and a single pullus wing in pin, clearly indicating predation.

Nestling care, diet and growth

After only a few minutes the tree shrew, which had raided nest 1, abandoned the partially eaten pullus and possibly as a result of the calls of the adults, it left the nest-palm. Both adults then flew up to the nest and shielded the nest with their bodies, partially opening their wings. The tree shrew subsequently returned to the nest about 15 minutes later but I drove it off to prevent predation of the remaining living pullus. During 12 hours of nest observation, both sexes fed the young and removed faecal sacs. The number of visits per hour varied between 0 and 6, with a mean of 3. Of 36 food items observed, 21 (60%) were Annelid worms, 2 consisted of white grub-like larvae (Figure 2) and 13 items were unidentified, many of which may have been Annelid worms. Feeding visits were quite brief, lasting 2–3 seconds. On the occasion of the first visit of the female, following the nest predation, she ate the prey items (Annelid worms) herself. The female was seen to remove faecal sacs seven times, the male only once (Figures 3 and 4). The female was twice observed, and the male once, eating something from inside the nest, possibly the contents of ruptured faecal sacs. The female attempted to remove the dead pullus from the nest at 15.38 hrs but failed after one attempt; she finally removed the corpse at 16.35 hrs on 27 June. Its weight pulled her down to the ground; after recovering herself she flew off low across the forest floor carrying the dead pullus in her bill.

On 25 June, nest 1 contained two well-grown pulli, whose feathers were just beginning to emerge from pin. On 28 June, the surviving pullus in nest 1 weighed 54 g. By 8 June, nest 3 contained a single pullus and the following day this had increased to two pulli, the second of which had hatched that morning. Additionally, and unconnected with any of the four nests, a fully fledged *P. ellioti* was observed on 3 June.

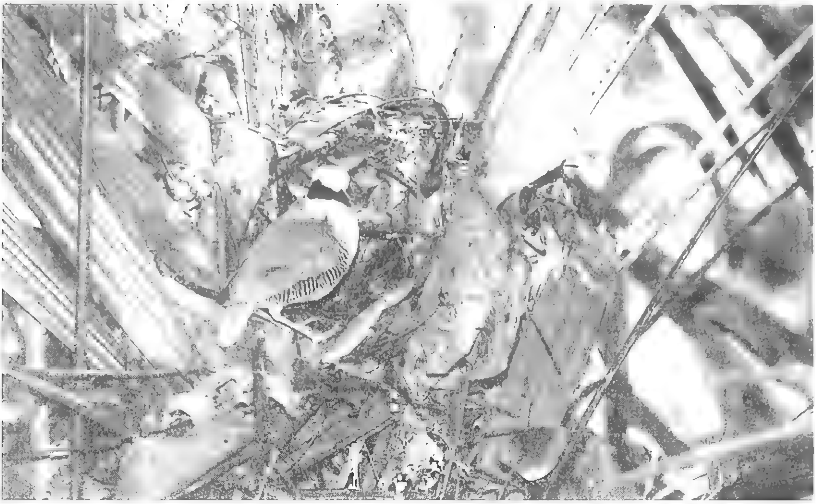

Figure 1. Male *Pitta ellioti* at the nest. (Photo: J. C. Eames.)

Figure 2. Female *Pitta ellioti* feeding young with a white grub. (Photo: J. C. Eames.)

Nestling behaviour

When nest 1 was approached on 25 June, the pulli retreated to the rear of the nest, prostrated themselves on the floor and then raised their abdomens and 'bristled' their pin feathers in what was obviously a defensive posture, rather reminiscent of a porcupine *Hystrix* sp. The

Figure 3. Female *Pitta ellioti* removing faecal sac. (Photo: J. C. Eames.)

Figure 4. Male *Pitta ellioti* removing faecal sac. Note that the pullus is presenting its cloaca to the male. (Photo: J. C. Eames.)

surviving pullus repeated this stance when the nest was approached on 28 June. When it was handled prior to being weighed, it immediately ejected a faecal sac which burst on the dorsal side of the abdomen.

On 27 June, whilst waiting to be fed, the surviving pullus frequently tried to catch airborne insects, including flies which were presumably attracted to its decomposing sibling. Periodically it closed its eyes and became inactive, presumably sleeping; on other occasions it was quite active, moving around the inside of the nest. On two occasions, immediately after being fed, the pullus turned around and presented its cloaca to the adult in attendance, it then ejected a faecal sac which was removed directly from the cloaca by the adult (Figure 4).

Calls of adults and young

Both adults were in the immediate vicinity of nest 1 during its predation. Immediately one of the adults began uttering a rather subdued *weo*, as if made through the teeth of a comb screened with tissue paper. Shortly afterwards the female flew to and perched on a liana about 4 m from the nest and 1 m above the ground, from where she repeated this call. The male continued calling from around the nest. During this bout of calling, the calls of both adults changed to a loud, exclamatory *skew*. Whilst approaching the nest both adults uttered soft *coo*-like calls. In response to the calls of the approaching adults the pullus made a soft *chip* note and a 'tweeting' of the kind typically associated with young birds or nestlings. The pullus frequently called and became active in response to other background forest noises. The adults gave the typical *skew* call when alarmed and at dusk from the vicinity of the nest. The trisyllabic territorial call rendered as *tu-wi-whil* (Lekagul & Round 1991) was not recorded from the vicinity of the nest.

Discussion

The discovery of three active nests during the first ten days of June provided the opportunity for an in-depth study of the breeding biology of *P. ellioti*. However, being otherwise committed I was able to make only brief but detailed observations at one nest, whilst the other nests were only intermittently observed. In the following discussion comparisons are drawn between the Bar-bellied Pitta's nests and those of other pitta species for which data were available.

Three of the *P. ellioti* nests were of a similar dome-like construction. Lacking a roof nest 3 was a little atypical, but since it had been lined it can be assumed that it had been completed. All four nests were constructed of similar materials and had similar dimensions (Table 1). Their mean measurements for depth × width × height were 183 × 245 × 200 mm. The mean entrance width × height measured 103 × 80 mm. The mean platform length × width was 132 × 100 mm and the mean nest chamber depth × width was 133 × 116 mm.

There are few detailed descriptions of pitta nests but fortunately one such case is that of *P. gurneyi*, which is one of the species most closely related to *P. ellioti*. These two species are of a similar size, the plumage patterns of the males are very similar and plumage patterns and coloration of the females virtually identical. Both species inhabit lowland broad-leaved evergreen forest, *P. gurneyi* exclusively so (Round & Treesucon 1986).

A nest of *P. gurneyi* was described as a flattened dome 180 mm deep, with an external horizontal diameter of 190 mm and an internal

TABLE 3
Statistics for nests of three *Pitta* species

Species	Hatching date	Earliest nest visit	Latest nest visit	No. of feeds observed (♂:♀)	% Annelid worms in diet	No. of faecal sacs removed/ hour
P. ellioti	8–9/6	06.15 h	18.18 h	13:22	60	0.83
P. gurneyi	15–17/6	06.18 h	18.28 h	35:28	73	0.91
P. caerulea	31/7–2/8	>06.00 h	<19.00 h	93:73 (visits)	34	0.55

diameter of 160 mm. The entrance was approximately 140 mm wide and 110 mm high. Thus it was similar in size and shape to the nest of *P. ellioti*. The materials used were also similar; the Gurney's Pitta nest was constructed of bamboo leaves and the leaves of unidentified broad-leaved plants, the floor being a shallow cup lined with black rootlets (Round & Treesucon 1986).

No consistency was evident in the choice of nest site amongst the four *P. ellioti* nests since altitude, aspect and slope varied (Table 1). All four nests were situated close to or on trails, reflecting observer bias as no off-trail nest searching was attempted. Three of the nests were located in disturbed secondary forest and one nest in primary forest. The Gurney's Pitta nest was in secondary forest with tree height in the range 15–20 m, 50 m from a logging road. Four nests of the Giant Pitta *P. caerulea*, a larger sundaic species, were located in secondary forest and a fifth nest in a fragment of primary forest 10 m from the forest edge (Round *et al.* 1989). Thus, all three species are able to nest in secondary forest formations, which suggests that in terms of nest site they are to some degree adaptable and ecologically tolerant. Any possible significance in the proximity of nests to forest edge is unknown.

Two of the *P. ellioti* nests were built in palmate palms *Licuala* sp., the third in a rattan *Calamus* sp., and the fourth in a rattan *Calamus* sp. through which a palmate palm *Licuala* sp. was growing. The nest of *P. gurneyi* was in the rattan *Salacca rumphii*, whilst the nests of *P. caerulea* were in *Calamus* sp., *Licuala* sp. and a rattan *Daemonorops* sp. A nest of the Blue-rumped Pitta *P. soror* has been recorded in a rattan of the subfamily Calamoideae (Lambert *et al.* in press). Thus, the locations of the four *P. ellioti* nests in palms, within the subfamilies Coryphoideae and Calamoideae, are apparently typical for the genus.

In all three *P. ellioti* clutches the eggs were of a similar size and ground coloration, but they varied in the degree and extent of their markings. In the three active nests, clutch-sizes ranged from 2 to 4 eggs, compared to 3 for *P. gurneyi* and 2 for *P. caerulea*. As would be expected, the eggs of *P. caerulea* at 30 × 35 mm were considerably larger than those of *P. ellioti*, but coloration and pattern were similar.

Table 3 compares some additional behavioural and seasonal variables between the three species, for *P. gurneyi* and *P. caerulea* based on data presented in Round & Treesucon (1986) and Round *et al.* (1989). The hatching dates for *P. ellioti* and *P. gurneyi* are within one week of each other, whereas the *P. caerulea* hatching date was 6 weeks later. The observation of a fully fledged juvenile *P. ellioti* on 3 June, the same date that a nest was found with four eggs, suggests the possibility that this species is double brooded. In all three species the period of activity at the nest began shortly after dawn and ended at dusk. Based on a single day's observation, the female *P. ellioti* made 62% of feeding visits; the female *P. gurneyi* made 44%, and the female *P. caerulea* 43% of all visits. Annelid worms were the major food item in the diet of nestling *P. ellioti* and *P. gurneyi* but constituted only one third of the diet in *P. caerulea*. The most significant dietary item of *P. caerulea* not recorded in the diet of the two smaller species were snails (Gastropoda), which accounted for 34% of the diet.

The certain predation of two of the four *P. ellioti* nests is interesting. The discovery of dismembered remains of a nestling in nest 4 rules out predation by a snake, which would swallow the prey whole, or a bird which would either do the same or would fly off with it to feed elsewhere. It therefore seems probable that nest 4 was also predated by a mammal. It was suggested that a nest of *P. gurneyi* was predated by a snake or humans (Round & Treesucon 1986).

Acknowledgements

I am grateful to my field companions Le Sau, Le Trong Trai, Le Van Cham and Nguyen Cu. Thanks to Shanthini Dawson for providing useful comments on an earlier draft of this paper.

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The taxonomic position of the Somali courser *Cursorius (cursor) somalensis*

by D. J. Pearson & J. S. Ash

Received 9 November 1995

The nominate race of the Cream-coloured Courser *Cursorius cursor* breeds in North Africa and the Middle East and on Socotra. It winters in the Sahara, and south to the Gambia, Mali, Chad, central Sudan, northern Ethiopia and Eritrea, and has occurred in Somalia (mainly the northwest: Ash & Miskell 1983) and northern Kenya (Shekkerman & van Wetten 1987). A similarly patterned but smaller courser is resident on arid plains in eastern Ethiopia, Somalia and northern and eastern Kenya (for distribution see Fig. 1). Two races are involved, *somalensis* Shelley 1885 in Ethiopia and northern Somalia, and the slightly darker *littoralis* Erlanger 1905 in southern Somalia and Kenya. These were described as races of the Cream-coloured Courser, under the systematic

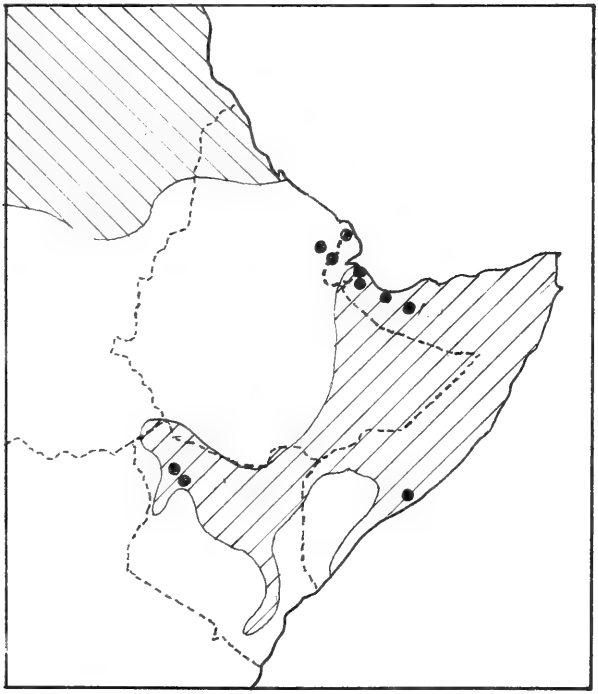

Figure 1. Distribution of *Cursorius c. cursor* (hatched area top left) and *Cursorius (c.) somalensis* (hatched area centre right) in east Africa. ●: isolated southern records of *C. c. cursor*.

TABLE 1

Comparisons of wing, tarsus and culmen lengths (range and mean, mm) in four taxa of coursers (*Cursorius s. somalensis*, *C. s. littoralis*, *C. c. cursor* and *C. rufus*)

		n	Wing	Tarsus	Culmen
somalensis	M	8	131–139 (134.8)	52–60 (55.8)	21–24 (23.0)
	F	4	129–135 (132.3)	52–56 (54.0)	23–25 (23.8)
littoralis	M	2	124, 137	49, 52	24, 23
	F	3	133–140 (135.7)	53–59 (55.3)	23–26 (24.3)
	MF	6	124–140 (134.0)	52–59 (53.5)	23–26 (24.0)
c. cursor	M	7	152–163 (157.6)	53–59 (55.7)	22–26 (23.7)
	F	5	151–160 (155.8)	51–57 (53.8)	22–25 (23.6)
rufus	M	5	136–143 (139.2)	47–49 (47.6)	20–21 (20.6)
	F	6	131–138 (135.3)	44–48 (47.0)	20–21 (20.7)

name *C. gallicus* (over which *cursor* Latham has precedence; see *Ibis* 1923, p. 429), but were subsequently regarded by some authors (e.g. van Someren 1922) as comprising an endemic east African species *C. somalensis*. More recently, they have usually been treated as races of *C. cursor* (see e.g. Vaurie 1962, Snow 1978, Britton 1980, Cramp & Simmons 1983, Urban *et al.* 1986).

Hayman *et al.* (1985) drew attention to several points of difference between *somalensis* (and *littoralis*) and Palearctic *C. cursor*. At the same time, they pointed out resemblances of size, underwing pattern and juvenile plumage to Burchell's Courser *C. rufus* of southern Africa, and they chose to treat the east African form under this species rather than under *cursor*. It should be mentioned here that *C. cursor* and *C. rufus* share the same head and crown pattern, and have in fact sometimes been combined as a single species (e.g. White 1962). But such lumping seems inappropriate, for the two differ considerably in their adult and juvenile plumages, and their ranges are far apart.

We have examined *somalensis* and *littoralis* specimens in the British Museum collection, and compared measurements and plumage patterns with those of *C. c. cursor* and *C. rufus*. The results of these comparisons are detailed below. While we agree with Hayman *et al.* that the east African forms should be regarded as specifically distinct from *C. cursor*, we do not recommend combining them with *C. rufus*. Instead, we propose that they be treated as races of an endemic east African species *Cursorius somalensis* (Shelley 1885).

Measurements

Wing, tarsus and bill measurements of four taxa are compared in Table 1. In wing-length, *somalensis* and *littoralis* are similar to *rufus*, but considerably smaller than *cursor*. Structurally, however, they differ from both *cursor* and *rufus* in having relatively longer legs and a longer bill. In flight, their feet project much further beyond the tail than in either *cursor* or *rufus*, a feature illustrated in Hayman *et al.* (1985, Plate 18).

Adult plumage

Head and body: The head and crown patterns of the forms considered here are very similar. White superciliary stripes extend back to meet around the nape. These are bordered below by narrow black post-ocular lines, while the crown is tawny or rufous in front and grey behind. The upperparts of *somalensis* are pale tawny brown, those of *littoralis* slightly darker brown. Both are less pale and less sandy above than *cursor*, but paler and less richly tawny than *rufus*. Below, the east African birds are pale brown, grading to whitish on the lower belly and crissum, similar in pattern to *cursor*. They differ from *rufus*, in which a blackish band separates a clear white lower belly and crissum from a bright tawny chest and upper belly. The underparts of *rufus* are in fact more like those of the Indian *C. chalcopterus* and the smaller Afrotropical *C. temminckii*, which have a similar head pattern, although with a wholly rufous crown.

Upperwing: The east African forms resemble *cursor* in having a plain innerwing and contrasting black outerwing, with only a very narrow whitish trailing edge to pale secondaries. *C. rufus* is more patterned, and has darker grey secondaries, with a broad white bar along the trailing edge. These differences are illustrated on Plate 18 of Hayman *et al.* (*op. cit.*).

Underwing: In *cursor* the underwing appears all dark. The coverts, axillaries and secondaries are jet black with only a narrow whitish bar along the secondary tips. In *somalensis* and *littoralis* the pattern is quite different. The coverts and axillaries are pale grey-brown, so that a pale innerwing contrasts with a blackish outerwing. The secondaries are greyish with a narrow whitish bar along the trailing edge. In *rufus*, black is confined to the outerwing (as in *somalensis*), but the innerwing pattern is rather different, for brown wing linings and axillaries contrast with dusky greater coverts, and the secondaries are mainly white. The underwing patterns of *somalensis*, *cursor* and *rufus* are compared in Figure 2a.

Tail: The upper tail pattern of *somalensis* and *littoralis* differs from that of both *cursor* and *rufus* (Fig. 2b). The feathers are mainly pale brown, with a dusky subterminal area on the central feather (t1), more distinct and broader blackish tips to the remaining feathers, and white confined to the distal part of the outer web of the outer feather (t6) and the sides of the tip of t5. In *cursor*, t1 is plain sandy-buff. The remaining feathers resemble those of *somalensis*, but the blackish bars are narrower and subterminal. *C. rufus* has a dusky subterminal mark on t1 like *somalensis*, but the feather bases are greyer. There is much more pure white at the tips of t3 to t5, and t6 is almost wholly white.

Juvenile plumage

The juvenile plumage of *somalensis* and *littoralis* bears a stronger resemblance to that of *rufus* than to *cursor*. The upperparts are strongly blotched and barred with dark brown, whereas in *cursor* they are only finely barred and generally much paler. In *somalensis*, the distal half of the tail is barred, whereas in *cursor* it is plain apart from fine

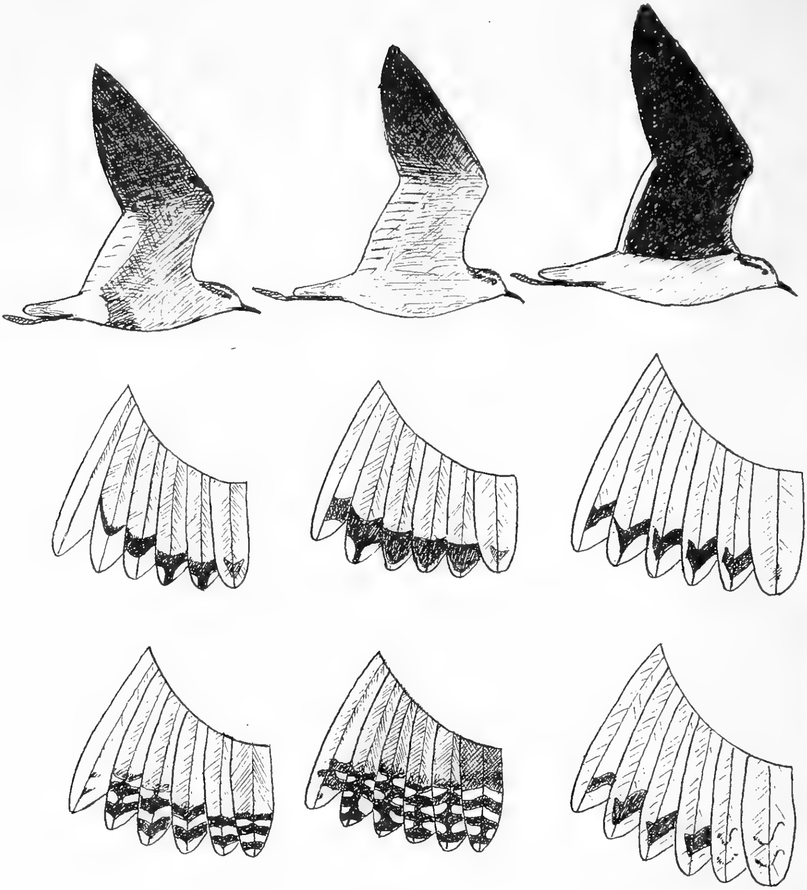

Figure 2. A comparison of *Cursorius rufus* (left), *C. somalensis* (centre) and *C. cursor* (right): top, adult underwing; middle, adult uppertail; bottom, juvenile uppertail.

subterminal lines on t1 and t2 and a single broad dark subterminal mark on t3–t6. In *rufus*, barring is more confined to the tail tip and is absent from t6 (Fig. 2c), and the general colour of the tail is greyer than in *somalensis*. Underwing patterns differ between juveniles of these forms in much the same way as between adults (see Hayman *et al.*, p. 250).

Discussion

The similarities and differences between *somalensis* (including *littoralis*), *cursor* and *rufus* may be summarised as follows:

1. Adults of all three share the same head and crown pattern and have plain upperparts.

2. Adults of *somalensis* and *cursor* have similar plain underparts, while *rufus* has a black band across the belly.
3. Adults of *somalensis* and *cursor* have a similar upperwing pattern, while that of *rufus* is obviously different.
4. All three have a different adult tail pattern.
5. All three have a different underwing pattern, but that of *cursor* is most distinct.
6. Juveniles of *somalensis* and *rufus* have a similar, strongly barred body plumage, while those of *cursor* are paler and plainer.
7. All three have a different juvenile tail pattern, but tails of *somalensis* and *rufus* are both barred.
8. *C. rufus* and *somalensis* are about the same size, while *cursor* is considerably larger.
9. *C. cursor* and *rufus* are similarly proportioned, while *somalensis* has relatively longer legs and bill.

Thus, *somalensis* differs structurally from both *cursor* and *rufus*. Its pale underwing is quite unlike that of *cursor*, while its plain adult belly differs markedly from that of *rufus*. In details of adult and juvenile wing and tail pattern it is also quite distinct from the Palearctic and southern African birds. In our view it should be recognised as a separate species.

Acknowledgements

The authors are grateful to R. Prŷs-Jones for facilities afforded at the British Museum (Natural History), Tring, and to A. J. Prater for valuable comments on an earlier draft of this paper.

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Birds of montane forest fragments in Chuquisaca Department, Bolivia

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Received 17 November 1995

The eastern slopes of the Andes of Bolivia comprise two significantly different regions. In the north the "Yungas" range from La Paz Department southeastwards to the Sibiria watershed near Comarapa at the boundary between Cochabamba and Santa Cruz Departments. In the south the "Valles" encompass large parts of Cochabamba, Chuquisaca, Santa Cruz and Tarija Departments (Fig. 1). Whereas the "Yungas" region is characterized by humid, evergreen forest, the "Valles" region is covered by a mosaic of deciduous forests, shrublands in the partly rain-shadowed inter-Andean valleys, and semi-evergreen forests on cloud-enshrouded scarps. The temperate semi-humid forest habitat in the "Valles" is isolated from that of the Yungas by the semi-arid Cochabamba basin (at 2500 m) and holds far fewer species of birds, probably as a consequence of its isolation and lower humidity

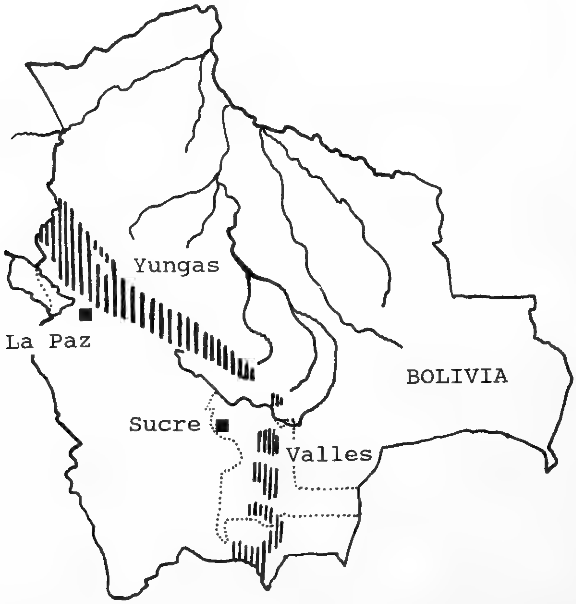

Figure 1. Map of Bolivia and Chuquisaca Department (dotted outline). Vertical hatching: the humid, montane parts of "Yungas" and the semi-humid, montane parts of "Valles".

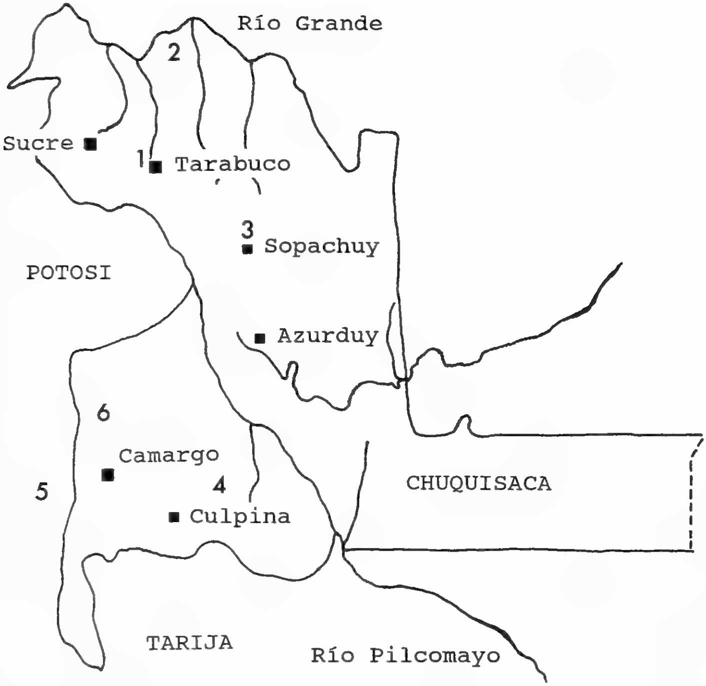

Figure 2. Map of Chuquisaca Department. Squares: cities and principal villages. Numbers 1–6 refer to the localities L1–L6 in the text.

(Fjeldså & Krabbe 1990, Fjeldså & Maijer 1996). The ornithologically least-known department of the "Valles" is Chuquisaca (Fig. 2), the size of Costa Rica, and the only one without any protected areas. As of just seven years ago, only 293 species of birds had been recorded there (Remsen & Traylor 1989). Large tracts of forest still remain in the subtropical zone near Río Grande and south of Azurduy (Fjeldså & Maijer 1996, pers. obs.; Fig. 2). In the temperate zone, however, only small, isolated patches of forest remain, most in remote areas. As a consequence of the rapid disappearance of these poorly known temperate forests, a team from the Zoological Museum, University of Copenhagen (ZMUC), and the Museo Nacional de Historia Natural, Universidad San Andres, La Paz (MNHN), was encouraged by the newly established Ministerio de Desarrollo Sostenible y Medio Ambiente to collect avifaunal information as part of a basis for future protective measures.

During March and April 1995 the birdlife was investigated in five remnant dry and semi-evergreen forest patches in the temperate zone of Chuquisaca Department and one dry forest in immediately adjacent Potosí Department (Fig. 2). Further records were obtained *en route* between these sites. Altogether 191 species were recorded. Included in this total and described in further detail below are six altitudinal records, two new departmental records, 38 departmental second records (four documented by tape-recordings and three by specimens for the first time), and nine otherwise noteworthy records. Our high number of second records for Chuquisaca of species that are widespread and common elsewhere illustrates how poorly the avifauna of this region is known.

Of the 293 species listed for Chuquisaca Department by Remsen & Traylor (1989), the major contributions were 150 species recorded by Bond & Meyer de Schauensee (1942, 1943) and 94 recorded by Remsen & Traylor (1983, 1989), and Remsen *et al.* (1985, 1986, 1987). There were few subsequent records (Cabot 1990), until Fjeldså & Maijer in the autumn of 1991 surveyed on foot a 400-km transect of mainly subtropical, but also patches of temperate forests of southern Chuquisaca, and listed sight records of 87 new departmental species (Fjeldså & Maijer 1996). In March 1992 Maijer made another trek from Narvaez in Tarija Department to Villa Charcas in Chuquisaca Department. The results from this trip are included in Fjeldså & Maijer (1996). Unfortunately, the results of Fjeldså & Maijer are published as a report and therefore are of rather difficult access. We thus consider it important to present a complete list of our records. Some records deserve further comments and are dealt with separately.

We also present a detailed description of the habitats to create a reference basis for following the future human impact on this threatened high-altitude ecosystem.

Study areas

L1: 12 road km north-west of Tarabuco, 19°09′S, 64°59′W, 3300–3400 m; 8–10 February and 21–22 March. A *c.* 50 ha patch of dry *Polylepis tomentella* ssp. *tomentella* (Rosaceae) woodland (Kessler 1995). Tree height: 1–3 m, most individuals 1–2 m. Distance between trees *c.* 2 m. Kessler (1995) characterized the habitat as open dwarf-forest with a ground coverage of 20%, but locally 90%. Human impact: grazing goats and introduced *Eucalyptus* (Myrtaceae) planted among *Polylepis* in two places. Many trees were sprouting from a thick basis near the ground, indicating previous and recent exploitation, probably for firewood. Laegaard (1992) and Kessler (1995) both stress that man-made fires are the most important factor in the creation and maintenance of puna and páramos below the upper limit of *Polylepis* (*c.* 4800 m). However, no signs of recent fires were observed in the present habitat.

L2: Cerro Palmarcito, 18°35′S, 64°52′W, 2300–2800 m; 13–18 March. A *c.* 10 ha stand of the endemic palm *Parajubaea torallyi* (Arecaceae) mixed with evergreen *Podocarpus* (Podocarpaceae) and deciduous forest along a permanent stream. Bordered below by extensive dry *Acacia* (Mimosaceae) forest mixed with columnar, 3 m cacti. The adjacent brushy slopes were dominated by *Dodonea*

(Sapindaceae). Somewhat drier than site 3, more humid than sites 1, 5 and 6. Tree heights: 20–25 m palms, 10–15 m *Podocarpus* and deciduous trees, 8–12 m stands of *Acacia* and 2 m *Dodonea* bushes. Epiphytes dominated by drought-resistant *Tillandsia usneoides* (Bromeliaceae) and congeners, together with cacti and lichens. Soil gravelly and sandy with a thin layer of dry leaf-litter. Human impact: grazing cows and exploitation of palm nuts evidenced by piles of cracked seeds, clusters of sprouting palmlets and liberation of adult palms by cutting down nearby competing trees.

L3: 9–10 road km north of Sopachuy, 19°26′S, 64°28′W, 2300–2500 m; 23–28 March. Fifty to one hundred hectares of more or less patchy, mostly deciduous forest, including some *Alnus* (Betulaceae) and mixed with many *Podocarpus* trees. Tree height: 10–15 m. Under forest cover a 10–15 cm thick layer of black, organic soil present. Outside forest cover, only heavily disintegrated, leached, red soil or bare rock present. In open areas no sign of regeneration. Human impact: firewood gathering, grazing cattle and goats.

L4: 1.5–2 km south of Portillo, 20°43′S, 64°42′W, 2900–3000 m; 2–5 and 8–10 April. Two patches, each 1–2 ha, of disturbed *Alnus* forest. The patch at 3000 m was fringed at one side by dispersed, old trees of *Polylepis*. Also 4.5 km southeast of Portillo, 20°44′S, 64°41′W, 2500–2600 m. A *c.* 5 ha *Podocarpus* forest, bordered above by disturbed *Alnus* forest and grassy slopes, below by grassy slopes and a narrow riparian forest. These sites were the most humid of those visited, with some *Podocarpus* trees having thick mats of moss on their branches. Tree heights: 5–6 m *Alnus* and 10–12 m *Podocarpus*, a few as tall as 20 m. Human impact: firewood gathering and grazing sheep, goats and cattle. Shrubby slopes were allowed to regenerate to a certain height before being cut, stacked and burnt on the future pasture.

L5: Parinolqui Pampa, Department of Potosí, 20°44′S, 65°34′W, 3000–3100 m; 6–8 April. *c.* 50–75 km^2 of dry, thorny *Prosopis ferox* (Mimosaceae) woodland on level and slightly undulating ground. Tree height: 2–3 m *Prosopis*, some 4–5 m. Width of crowns 3–7 m and distance between crowns 1–15 m, but often only 5–7 m. Many *Tillandsia* epiphytes on the terminal branchlets. The understorey composed of grass, herbs and cacti. Distribution of size classes of trees rather homogeneous, suggesting human impact. Grazing cattle were observed in the lower undulating parts, and two trucks seen loaded with firewood undoubtedly came from Parinolqui Pampa, the only forested area in the region.

L6: Cerro Huayra Huasi, 20°22′S, 65°08′W, 3450 m; 10–11 April. *c.* 50 km^2 of *Polylepis tomentella* ssp. *tomentella* (Kessler 1995) dwarf woodland on nearly bare soil in a very dry region. Tree height: 1–2 m, some 3–4 m. In a few places trees were 2–4 m apart, but generally they were further apart. Human impact: trees cut down in the past and present, probably for firewood. Some regeneration now occurs from the stumps. Grazing sheep and goats.

L7: Río Grande–Sucre along road from Cochabamba (89 km), 1500–2000 m; 7 March. Scattered, dry vegetation.

L8: Sucre–Tarabuco (63 km), 2900–3300 m; 8 March. Arid, open country with scattered grain fields.

L9: Tarabuco–Presto (35 km), 2500–3300 m; 11 March. Arid, open country with scattered trees, scrub and grain fields.

L10: Presto–Rodeo (40 km), 2500–3700 m; 11–12 March. Riparian arable land, quebradas with small patches of *Podocarpus*, *Alnus* and shrubs.

L11: Rodeo–Molani including Molani (12 trail km), 2500–3400 m; 12–13 and 18–19 March. Farmland and an 800 m long, narrow stream-side thicket of *Podocarpus* and *Alnus*, mixed with scattered *Parajubaea torallyi* palms.

L12: Molani–Cerro Palmarcito, 1600–2500 m; 13 and 18 March. Dry, thorny forest with cattle.

L13: Tarabuco–Zudañes (48 km), 2000–3300 m; 22 and 28 March. Arid, open country with scattered trees and bushes. Several steep, rocky canyons.

L14: Zudañes–Tomina (43 km), 2100–2500 m; 22 and 28 March. Arid, open country with scattered trees and bushes. The road passes along the edge of a large area of only slightly disturbed, subtropical dry forest.

L15: Tomina–San Pedro (62 km), 1800–2100 m; 22 and 28 March. Semi-humid farmland with riparian bushes and trees. In some places patches of semi-humid forest.

L16: Sucre–20 km south of Puna (180 km), turnoff from Potosi at km 131, 2800–3700 m; 31 March and 12 April. Open, arid country.

L17: Pond 20 km south of Puna at 19°52′S, 65°33′W, 3450 m; 31 March and 12 April.

L18: 25 km south of Otavi, at 20°12′S, 65°14′W, 3360 m; 1 April. Fairly open thorny scrub mixed with a few cacti and trees.

L19: Culpina–Incahuasi (12 km), 2900–3000 m; 1, 5, 8 and 11 April. Dry quebrada with bare ground and scattered bushes. Irrigated farmland on plain around Incahuasi.

L20: Incahuasi–Portillo (37 km); 3000–3600 m; 1, 2, 8 and 11 April. Open, arid country with thin grass-cover. A few scattered patches of semi-humid *Alnus* shrubbery near Portillo.

L21: Camargo–El Puente on Cotagaita road (45 km), 2500 m; 6 April. Large riparian trees, mainly *Schinus molle*. Vineyards.

L22: Department of Potosi: Cotagaita–Cancha Pata Pampa (61 km), 2600–3000 m; 6–7 April. Dry, sandy area with cacti, thorny brush and scattered trees.

Species list

Abundances estimated for the six forest patches: X (one record only, status uncertain), R (rare, only recorded a few times, always in small numbers (<10 individuals)), U (uncommon, recorded most days, but always in small numbers), FC (fairly common, recorded daily in small numbers), C (common, recorded (seen or heard) daily in fairly large numbers (>10 individuals)). For other localities the actual number seen is given in parenthesis. The large number of second records from the

TABLE 1

Andean humid and semi-humid forest species that are distributed in the "Yungas" and across the semi-arid Cochabamba basin to "Valles" (Yungas–Valles), or are endemic to southern Bolivia/northern Argentina (Boliviano–Tucumano). Some of these species are chiefly submontane, but they all reach as a minimum the lower limit of the montane zone (2300–2500 m)

Species	Yungas–Valles	Boliviano–Tucumano
Penelope dabbenei		X
Columba fasciata	X	
Amazona tucumana		X
Glaucidium jardinii	X	
Eriocnemis glaucopoides		X
Piculus rubiginosus	X	
Synallaxis azarae	X	
Knipolegus signatus	X	
Pyrrhomyias cinnamomea	X	
Mecocerculus leucophrys	X	
Troglodytes solstitialis	X	
Myioborus brunniceps		X
Thlypopsis ruficeps	X	
Chlorospingus ophthalmicus	X	
Atlapetes torquatus	X	
Atlapetes fulviceps		X
Poospiza erythrophrys		X

department are marked with an asterisk and followed by the reference to the first record.

Specimens are deposited in Colección Boliviano de Fauna (CBF), a section of MNHN, or in ZMUC, abbreviations which precede the catalogue number in the species list. A "b", appended to the locality, indicates that no specimen, but at least one blood sample was obtained. All blood samples are deposited at the ZMUC and are available to researchers (see Arctander & Fjeldså 1994). The sequence of species follows Meyer de Schauensee (1970).

Table 1 lists Andean humid and semi-humid forest species that are distributed from "Yungas" into "Valles", or are endemic to "Valles" and the Tucuman Province of northern Argentina. Some of these species are chiefly submontane, but all species reach as a minimum the montane zone (lower limit 2300–2500 m). More details about the southward reduction in numbers of humid forest species can be found in Fjeldså & Maijer (1996).

Nothoprocta pentlandii L1 X, L3 FC; L4 FC; L11 (2); L13 (1); L15 (1); 2350–2800 m. *Nothoprocta ornata** Cabot & Serrano (1988). L1 U; L6 X; 3350–3500 m. *Nothura darwinii* L1 U; L3 U; L4 U; L15 (1); 2250–3350 m. *Anas flavirostris* L17 (2 with pull. 31/3). *Syrigma sibilatrix** Fjeldså & Maijer (1996). L15 (5). *Theristicus melanopis* L7 (22 road km south of Río Grande) (2); 1800 m. *Vultur gryphus* L1 U; L2 FC; L3 R; L4 U; L11 (2); L16 (1); L22 (1); 2300–3400 m. *Cathartes aura* L3 U; L4 U; L8 (2); L11 (1); L12 (U); L13 (3); L14 (2); L15 (5);

L19 (1); L21 (1); L22 (2); 2300–3100 m. *Coragyps atratus** Fjeldså & Maijer (1996). L2 (6); L10 (20); L15 (1); 1800–2100 m. *Sarcoramphus papa** Fjeldså & Maijer (1996). L2 U; 2700 m. *Accipiter* cf. *ventralis* L2 U; L4 X; L15 (2); 2000–2500 m. *Buteo* cf. *polyosoma* L4 U; L5 U; L6 R; L19 (2); L20 (1); L22 (1); 2800–3100 m. *Buteo magnirostris* L3 U; 2300–2400 m. *Buteo brachyurus*?* Fjeldså & Maijer (1996). L12 R; 1600 m. *Geranoaetus melanoleucus* L2 FC; L4 U; L8 (1); L10 (3); L18 (1); 2300–3360 m. *Buteogallus urubitinga** Remsen *et al.* (1985). L2 R; 2500 m. *Circus cinereus* L13 (1); L16 (76, 133, 136 and 162 km from Sucre) (4); L19 (2); 3000–3200 m. *Phalcoboenus megalopterus** Cabot & Serrano (1988). L4 U; L6 U; L15 (2); L20 (2); L22 (1); 2000–3500 m. *Polyborus plancus* L3 U; 2300–2500 m. *Falco peregrinus* L19 (1); 3000 m. *Falco femoralis* L5 U; L11 (2); L12 R; L20 (3); 2500–3420 m. *Falco sparverius* L2 FC; L7 (1); L11 (2); L15 (2); L21 (1); 2000–2500 m. *Penelope dabbenei* L2 U; L3 U; L4 FC; 2300–3000 m. *Vanellus resplendens* L19 (1); L22 (1); 3000 m. *Charadrius collaris* L17 (1 31/3); 3450 m. *Pluvialis dominicus* L17 (6 31/3, 10 12/4), 3450 m. *Oreopholus ruficollis** Fjeldså & Maijer (1996). 8 km north of Otavi (12); 3400 m. *Calidris bairdii* L17 (2 31/3, 35 12/4); 3450 m. *Tringa melanoleuca* L17 (4 31/3, 7 12/4); 3450 m. *Tringa flavipes* L17 (4 12/4); 3450 m. *Phalaropus tricolor* L17 (88 12/4); 3450 m. *Himantopus himantopus* L17 (4 31/3, 7 12/4); 3450 m. *Columba fasciata** Fjeldså & Maijer (1996). L2 U; L3 FC; L4 C; L11 (7); L15 (30); 2300–3000 m. *Columba maculosa* L1 U; L6 U; L7 (1); L10 (4); L11 (8); L15 (4); L22 (2); 2000–3400 m. *Zenaida auriculata* L2 C; L3 FC; L4 FC; L6 FC; L9 (2); L11 (7); L14 (4); L15 (7); L19 (3); L21 (4); 2300-3500 m. *Leptotila verreauxi* L2 C; L3 FC; L4 FC; L7 (4); L9 (1); L11 (3); L21 (1); L22 (1); 1800–3000 m. *Leptotila megalura* L15 (3); 1800–2200 m. *Columbina picui* L2 FC; L4 FC; L7 (1); L12 (6); L13 (2); L14 (11); L15 (27); L19 (2); L20 (7); L21 (2); 1600–3000 m. *Metriopelia ceciliae* L2 U; L9 (2); L11 (3); L13 (6); L14 (2); L21 (1); 2500–3000 m. *Metriopelia melanoptera* L1 U; L4 FC; L5 C; L6 FC; L17 (1); L18 (3); L20 (4); L22 (5); 2800-3500 m. *Ara rubrogenys* L2 U, L11 (9); 2000–2600 m. *Aratinga mitrata* L2 C; L11 (>100); L12 (>50); 1800–2500 m. *Aratinga acuticauda* L3 C; L10 (19); L11 (20); L12 (>150); L15 (60); 1600–2500 m. *Pyrrhura molina* L4 U; 2500 m. *Bolborhynchus aurifrons* L6 FC; 3400–3450 m. *Bolborhynchus aymara* L2 FC; L4 U; L5 FC; L9 (heard); L10 (3); L11 (14); L13 (8); L14 (4); L21 (3); L22 (11); 2200–3100 m. *Amazona tucumana* L2 U; L4 C; L11 (2); 2300–2700 m. *Coccyzus americanus* L15 (1 23/3); 2100 m. *Guira guira** Remsen *et al.* (1986). L15 (10); 2250 m. *Piaya cayana* L12 (2); 2100–2200 m. *Otus choliba* L2 U; 2300–2400 m. *Otus hoyi** Fjeldså & Maijer (1996). L3 X; L4s (ZMUC 91843) X; 2300–2500 m. *Glaucidium jardinii* L4 X; 3000 m. *Athene cunicularia* L5 X; 3100 m. *Caprimulgus longirostris** Fjeldså & Maijer (1996). L4 X; 2500–3000 m. *Streptoprocne zonaris* L3 X; 2500 m. *Aeronautes andecolus* L2 U; L3 X; L5 X; L11 (43); L12 (3); L13 (10); L21 (1); 2400–3100 m. *Colibri coruscans* L1b FC; L2 U; L4 U; L6 R; L10 (3); L20 (2); 2500–3400 m. *Colibri serrirostris* L2 X; 2700 m. *Amazilia chionogaster* L2b FC; L3b FC; L11 (1); L15 (1); L21 (1); 2100–2500 m. *Oreotrochilus estella** Fjeldså & Maijer (1996). L4 U;

L6 FC; 2900–3500 m. *Oreotrochilus adela* L1 R; L6 R; 3350–3450 m. *Patagona gigas* L1 FC; L4 FC; L5 U; L18 (1); L22 (1); 2800-3400 m. *Eriocnemis glaucopoides* L4 (CBF 02779) FC; 2500 m. *Sappho sparganura* L1 FC; L2b FC; L3b FC; L4 FC; L6 U; L8 (1); L11 (1); 2300–3500 m. *Microstilbon burmeisteri* L2 R; L3 (CBF 02780) U; L4 U; 2300–2500 m. *Nystalus maculatus* L10 (1); L12 (1); L14 (1); L15 (1); 2000–2600 m. *Picumnus dorbygnianus* L2 U; L3 X; 2300–2400 m. *Colaptes rupicola* L1 U; L2 U; L5 U; L16 (4); L20 (3); 2700–3300 m. *Colaptes melanolaimus* L4 U; L21 (1); 2500–3000 m. *Piculus rubiginosus* L4 X; 3000 m. *Melanerpes cactorum** Remsen *et al.* (1986). L12 (1); L14 (1); 1800–2000 m. *Veniliornis frontalis* L3 (CBF 02781) U; L4 (CBF 02782) U; 2300–2500 m. *Picoides lignarius* L4 U; L5 U; L12 X; 2200–3100 m. *Campephilus leucopogon** Fjeldså & Maijer (1996). L3 R; 2450 m. *Geositta tenuirostris* L4 U; 3100 m. *Geositta rufipennis** Cabot (1990). L1 U; L6 X; L18 (2); 3300–3400 m. *Geositta cunicularia* L8 (2); L13 (3); L17 (1); L19 (2); 3000–3450 m. *Cinclodes fuscus* L1 U; L4 R; L6 U; L19 (1); L20 (2); 2800–3450 m. *Cinclodes atacamensis** Fjeldså & Maijer (1996). L6 U; 3400–3500 m. *Upucerthia jelskii** Fjeldså & Maijer (1996). L5 U; L6 U; 3100–3500 m. *Upucerthia andaecola* L1 FC; L4 FC; L6 FC; L10 (2); L18 (1); L20 (1); 2600-3500 m. *Upucerthia harterti* L2 (CBF 02783) FC; L11 (2); 2350–2500 m. *Furnarius rufus* L1 U; L3 U; L9 (2); L11 (7); L12 R; L14 (1); L15 (5); L19 (2); L21 (3); 1600–3350 m. *Leptasthenura aegithaloides** Remsen *et al.* (1986). L6 (CBF 02784) FC; 3400–3500 m. *Leptasthenura yanacensis** M. Kessler in Fjeldså & Maijer (1996). L6 R; 3450–3500 m. *Leptasthenura fuliginiceps* L1 FC; L4 FC; L5 X; 2800–3400 m. *Synallaxis frontalis* L2 (CBF 02785) FC; 2400 m. *Synallaxis azarae* L3 (CBF 02786) FC; L4 U; 2300–3000 m. *Cranioleuca pyrrhophia* L2b C; L3 (ZMUC 91742, CBF 02787) C; L4 C; L5 (ZMUC 91741) U; 2300–3100 m. *Asthenes dorbignyi* L1 FC; L2 R; L4 FC; L5 (ZMUC 91747) C; L6 FC; L10 (5); L11 (3); L13 (3); L14 (1); L18 (ZMUC 91748) (2); L22 (CBF 02788) (7); 2500–3500 m. *Asthenes wyatti** Fjeldså & Maijer (1996). L1 U; 3400 m (song and calls tape-recorded). *Phacellodomus maculipectus* L2 U; L3 (ZMUC 91752, CBF 02789) FC; L4 (ZMUC 91751) FC; 2300-3000 m. *Phacellodomus striaticeps* L1 FC; L4 FC; L5 (ZMUC 91753–54, CBF 02790) FC; L6 FC; L8 (2); L11 (7); L12 U; L13 (4); L22 (2); 2500–3500 m. *Thamnophilus caerulescens* L3 FC; 2300–2500 m. *Thamnophilus ruficapillus* L2 FC; L3 FC; L11 (2); 2300–2550 m. *Scytalopus superciliaris zimmeri* L4 (ZMUC 91755–57, CBF 02791) FC; 2500–3000 m. *Melanopareia maximiliani* L2 FC; L3 U; L4 FC; L11 (8); 2300–3000 m. *Pachyramphus polychopterus* L2 U; L3 FC; 2300–2500 m. *Pachyramphus validus* L2 R; L4 X. 2500–3000 m. *Phytotoma rutila* L5 U; L6 U; L9 (2); L14 (1); L15 (3); L18 (5); L19 (1); 2000–3450 m. *Agriornis montana* L4 FC; L6 X; L8 (2); L9 (1); L11 (1); L19 (1); L20 (2); 2800–3500 m. *Muscisaxicola cinerea* L20 (CBF 02790, 20°41′S, 64°47′W) (4); 3250 m. *Muscisaxicola rufivertex** Fjeldså & Maijer (1996). L6 X; 3400 m. *Muscisaxicola maculirostris** Cabot (1990). L1 U; L5 C; L6 FC; L18 (1); L22 (2); 3100–3500 m. *Polioxolmis rufipennis** Fjeldså & Maijer (1996). L1 U; 3400 m. *Knipolegus aterrimus* L1 R; L2b FC; L3 FC; L4

U; L5 C; L10 (3); L11 (6); L14 (3); L15 (7); L21 (1); L22 (6); 2000–3350 m. *Knipolegus signatus* L3 (CBF 02795) U; L4 U; 2300–2900 m. *Ochthoeca oenanthoides** Remsen *et al.* (1987). L1 FC; L5 C; L6 (CBF 02794) FC; L20 (2); 3100–3500 m. *Ochthoeca leucophrys* L1 FC; L4 FC; L6 (CBF 02794) FC; 3000–3450 m. *Satrapa icterophrys* L2 R; 2500 m. *Suiriri suiriri* L12 (2); 2200 m. *Tyrannus melancholicus** Fjeldså & Maijer (1996). L3 U; L7 (1); L12 (1); L15 (4); L21 (1); 1700–2500 m. *Pitangus sulphuratus* L7 (1); L15 (8); 2000–2250 m. *Empidonomus aurantioatrocristatus* L12 (1); 2200 m. *Myiarchus tuberculifer* L2 R; L3 U; L4 FC; 2400–3000 m. *Myiarchus tyrannulus* L12 (3); 1800–2200 m. *Pyrrhomyias cinnamomea* L2 FC; L3 FC; L11 (1); 2300–2500 m. *Myiophobus fasciatus* L2b FC; L3b FC; 2300–2500 m. *Hirundinea ferruginea* L2 FC; L4 U; L10 (1); L12 (3); L13 (2); L15 (5); L21 (3); 1800–2800 m. *Stigmatura budytoides* L2b FC; L11 (1); L12 (16); 1800–2500 m. *Anairetes parulus** Fjeldså & Maijer (1996). L1 U; L4 U; L6 FC; 3000–3500 m (dawn song tape-recorded at L1). *Anairetes flavirostris* L1 U; L4 U; L5 FC; L11 (3); L18 (1); L22 (1); 2500–3300 m. *Hemitriccus margaritaceiventer* L2 (CBF 02796) U; 2400 m. *Mecocerculus leucophrys* L2b FC; L3b FC; L4 C; L6 R; L11 (7); 2300–3000 m. *Mecocerculus hellmayri* L2 (CBF 02799) U; L3 (ZMUC 91749, CBF 02800) FC; L4 FC; L20 (1); 2300–3000 m. *Phylloscartes ventralis* L3 (CBF 02797) U; 2300 m. *Sublegatus modestus*? L12 (3); 1800–2200 m. *Elaenia albiceps* L1b U; L2 (CBF 02801) C; L3 (ZMUC 91758–59) C; L4 FC; L10 (3); L11 (13); L12 (5); L22 (2); 2200–3350 m. *Elaenia parvirostris* L3s (ZMUC 91760) X; L4 U; 2300–2500 m. *Elaenia strepera* L2 (ZMUC 91761, CBF 02802) FC; L3 (CBF 02803–5) FC; L11 (2); 2300–2400 m. *Camptostoma obsoletum* L2 (CBF 02798) (1); L3 U; L15 (1); 2000–2300 m. *Notiochelidon cyanoleuca** Cabot (1990). L3 FC; L9 (15); L10 (1); L11 (5); L13 (3); L14 (17); L15 (2); 2300–2500 m. *Petrochelidon pyrrhonota* L19 (11/4) (1). *Petrochelidon andaecola* L2 C; L13 (1); 2700 m. *Cyanocorax chrysops* L2 U; L4 U; L12 (4); 1700–2500 m. *Troglodytes aedon* L3b FC; L4 U; L11 (2); L22 (3); 2300–3000 m. *Troglodytes solstitialis* L4 FC, 2500–3000 m. *Mimus dorsalis* L5 FC; L8 (1); L9 (3); L13 (3); L19 (1); L22 (3); 2300–3100 m. *Turdus chiguanco* L1b FC, L2 FC; L3 U; L4 FC; L6 U; L8 (2); L9 (1); L11 (2); L13 (3); L14 (1); L15 (4); L20 (1); L22 (1); 2000–3450 m. *Turdus nigriceps* L2 U; L3 (ZMUC 91738, CBF 02806–7) FC, L4 FC; 2300–2500 m. *Turdus rufiventris* L3 X; L15 (1); 2250–2300 m. *Turdus amaurochalinus* L2b FC; L15 (4); L21 (1); 2000–2400 m. *Polioptila dumicola* L2 FC; L12 (6); L14 (1); 1600–2400 m. *Anthus correndera* L20 (2); 3200 m. *Cyclarhis gujanensis* L2 U; L3 U; L4 U; L12 (3); 1600–3000 m. *Vireo olivaeceus** Remsen *et al.* (1987). L2b FC; L3b U; 2250–2400 m. *Molothrus* cf. *bonariensis* L15 (2); 2200 m. *Molothrus badius* L1 U; L3 U; L6 U; L9 (5); L10 (10); L11 (4); L13 (5); L14 (4); L15 (11); L18 (5); L19 (10); 2300–3400 m. *Oreopsar bolivianus* L9 (*c.* 20 road km north of Tarabuco) (6); L13 (ZMUC 91739, 19°05′S, 64°51′W, 2750 m) (6); L16 (km 18, 68 and 74 from Sucre) (11); 2500–2750 m. *Icterus chrysopterus** Fjeldså & Maijer (1996). L4 U; 2500 m. *Myioborus brunniceps* L2 (CBF 02808) C; L3b C; L4 FC; L11 (3); L15 (1);

2000–3000 m. *Diglossa sittoides* L1 U; L4 U; 2900–3350 m. *Oreomanes fraseri* L1 U; 3300–3400 m. *Pipraeidea melanonota* L3 (CBF 02809) FC; L4 FC; 2300–3000 m. *Thraupis bonariensis* L1 U; L2 FC; L3b FC; L4 FC; L5 U; L6 R; L9 (2); L11 (3); L14 (1); L15 (2); L18 (3); 2250–3360 m. *Thraupis sayaca* L2 (CBF 02810) FC; L3b FC; L14 (2); L15 (9); 1800–2500 m. *Piranga flava* L12 (1); 2200 m. *Thlypopsis ruficeps* L3 FC; L4 FC; 2400–3000 m. *Chlorospingus ophthalmicus* L3 FC; L4 (CBF 02811) FC (only in *Podocarpus*); L11 (2); 2300–2500 m. *Saltator aurantiirostris* L1 FC; L2b FC; L3b C; L4 U; L5 U; L6 U; L9 (2); L10 (4); L11 (15); L12 (1); L14 (1); L15 (9); L21 (1); 1600–3400 m. *Saltator rufiventris** Fjeldså & Maijer (1996). L4 (CBF 02812) U; 2800–3000 m. *Pheucticus aureoventris* L2 FC; L4 U; L11 (2); 2400–3000 m. *Sporophila caerulescens** Fjeldså & Maijer (1996). L2b C; L3b C; L11 (9); L14 (1); L15 (7); 2300–2500 m (song tape-recorded at L2 and L3). *Catamenia inornata** Fjeldså & Maijer (1996). L1 U; L4 U; 2800–3400 m (song tape-recorded at L4). *Catamenia analis* L1 FC; L2 U; L3 U; L4 FC; L6 R; L10 (15); L11 (10); L18 (1); L20 (1); 2500–3400 m. *Sicalis olivascens** Remsen *et al.* (1987). L1 FC; L4 U; L6 FC; L8 (3); L9 (8); L10 (3); L11 (5); L13 (10); L20 (2); 2500–3450 m. *Sicalis luteocephala* L1 (CBF 02813–14) U; L5 R; L6 X; L9 (7 sites) (23); L10 (4 sites) (24); L11 (2); L13 (ZMUC 91744–45) (3 sites) (>10); L19 (ZMUC 91743, CBF 02815) (3 sites) (18); L20 (3 sites) (13); 2500–3400 m. *Sicalis flaveola* L2 FC; L3 FC; L8 (10); L9 (5); L11 (3); L12 (17); L13 (5); L14 (8); L15 (36); L19 (2); L22 (2); 1600–2500 m. *Phrygilus atriceps* L1 U; L6 FC; L11 (2); L18 (3); L22 (2); 2500–3450 m. *Phrygilus plebejus** Remsen *et al.* (1987). L1 C; L4 FC; L5 C; L6 FC; L8 (5); L10 (7); L13 (10); L18 (4); L20 (11); L21 (2); L22 (9); 2800–3500 m. *Phrygilus unicolor* L4 R; L6 FC; 3000–3500 m. *Phrygilus alaudinus* L1 FC; L3 R; L4 R; L8 (2); L19 (2); L20 (3); 2400–3350 m. *Phrygilus fruticeti** Remsen *et al.* (1987). L1 FC; L5 R; L6 U; L18 (3); 3300–3450 m. *Diuca diuca** Fjeldså & Maijer (1996). L5 (ZMUC 91746) C; L18 (CBF 02816) (8); 3100–3360 m. *Lophospingus griseocristatus* L2 U; L3b C; L5 FC; L7 (2); L9 (1); L11 (2); L14 (4); L15 (35); L21 (40); L22 (5); 2000–3100 m. *Atlapetes fulviceps* L2 U; L3b FC; L4 C; L11 (2); 2300–3000 m. *Buarremon (Atlapetes) torquatus* L3b U; L4 FC; 2300–2500 m (change of genus: see Remsen & Sol Graves in press). *Zonotrichia capensis* L1 C; L2 FC; L3 C; L4 C; L5 FC; L6 FC; L10 (8); L11 (18); L12 (15); L13 (>35); L14 (5); L15 (12); L18 (2); L20 (7); 1800–3500 m. *Arremon flavirostris* L2 (ZMUC 91740, CBF 02820) U; 2400 m. *Ammodramus humeralis* L2 FC; 2400 m. *Poospiza hypochondria* L1 FC; L4 FC; L6 R; L10 (1); L11 (4); L14 (2); L20 (1); 2000–3350 m. *Poospiza torquata* L2 (CBF 02818) FC; L3 FC; L11 (2); 2300–2500 m. *Poospiza melanoleuca* L2 (CBF 02819) U; 2250–2500 m. *Poospiza nigrorufa* L2 U; L3 (ZMUC 91750, CBF 02817) FC; L15 (6); 2300–2500 m. *Poospiza erythrophrys* L2 U; L3 FC; L4 FC; 2400–3000 m. *Embernagra platensis* L4 R; L10 (1); L11 (2); 2500–2800 m. *Carduelis magellanica* L1 C; L2b C; L3 C; L4 FC; L5 FC; L6 FC; L11 (11); L13 (5); L14 (3); L15 (8); L18 (5); L19 (2); L20 (3); L22 (3); 2200–3500 m. *Carduelis atrata** Fjeldså & Maijer (1996).

L1 U; 3350 m. *Passer domesticus* L19 (plain north of Incahuasi) (1); Culpina C; Camargo C; 2440–3000 m.

Noteworthy records

WHISTLING HERON *Syrigma sibilatrix*

On 28 March a flock of 5 was seen foraging on locusts 15 road km north of Sopachuy (*c.* 19°24′S, 64°28′W) on a pampa at 2500 m. Previously recorded up to 1700 m on the Andean slope in southern Bolivia (Fjeldså & Maijer 1996).

RED-FACED GUAN *Penelope dabbenei*

No observations in Bolivia have been published of the species since Bond & Meyer de Schauensee (1943) reported it from only four localities in the country. However, Fjeldså & Maijer (1996) encountered the species daily at 1700–2700 m in Chuquisaca and also estimated the population size north of Río Pilcomayo.

BLACK-NECKED STILT *Himantopus himantopus*

First record from Potosí Department.

RED-FRONTED MACAW *Ara rubrogenys*

Nine individuals of this threatened CITES Appendix I parrot, numbering only a few thousands (possibly only a thousand) (Collar *et al.* 1992), were seen on 13 March at 2500 m near Molani. On 14 March six birds were seen between Molani and Palmarcito, four on 15 March at Palmarcito, five on 16 March at Palmarcito, two on 18 March between Palmarcito and Molani and three on 19 March at Molani. All observations were of pairs or singles. The main distribution is within Cochabamba Department, and a recent study provides numbers, distribution and information on ecology within this area (Christiansen & Pitter 1992–1993a,b, Pitter & Christiansen 1995).

ALDER PARROT *Amazona tucumana*

In early April we observed daily a flock of 80 in the *Podocarpus* forest near Portillo. Fjeldså & Maijer (1996) saw 900 roosting in March 1992 in these mountains (Monte Chapeados). A group of 6 was observed closely for an hour. A constantly begging juvenile was regularly fed by at least one of the adults, which all appeared to feed entirely in the tips of *Podocarpus* branches. Alder Parrot is a CITES Appendix I south Bolivian/Tucuman forest endemic. Published records from Bolivia comprise only the observations of Fjeldså & Maijer (1996) and two localities by Bond & Meyer de Schauensee (1942).

CLOUD-FOREST SCREECH-OWL *Otus hoyi*

One specimen (ZMUC 91843) of this newly described species (König & Straneck 1989) was obtained on 9 April 1995, the first specimen from Chuquisaca. Fjeldså & Maijer (1996) listed the few existing skins and discussed the species' affinities with Tropical Screech-Owl *Otus choliba*.

BLUE-CAPPED PUFFLEG *Eriocnemis glaucopoides*

In mature *Podocarpus* forest at L4. It had not previously been recorded from this habitat (Fjeldså & Krabbe 1990, Fjeldså & Maijer 1996).

SPOT-BACKED PUFFBIRD *Nystalus maculatus*

One was seen on 11 March 1 km due north of Presto at 2600 m, the highest known elevation for the species. The species is widespread in adjacent lowlands and ascends to above 2000 m and rarely to 2300 m (Fjeldså & Maijer 1996). The only other records for Chuquisaca are 30 km SE Carandayti (Remsen *et al.* 1986) and a few seen September 1991 in thornscrub in the hills on both sides of Río Pilcomayo (Fjeldså & Maijer 1996).

GOLDEN-OLIVE WOODPECKER *Piculus rubiginosus*

One male was carefully described at L4 in a patch of *Alnus* at 3000 m. The species is primarily premontane and ascends at least to 2300 m in Peru and Yungas of Bolivia, but its elevational distribution is poorly known in Valles of s Bolivia and the similar Tucuman of nw Argentina (Fjeldså & Krabbe 1990).

CREAM-BACKED WOODPECKER *Campephilus leucopogon*

Seen on 28 March at 2450 m at L3. Previously known up to 1730 m (Tarija Department) and only from a single locality at 1150 m in Chuquisaca (Fjeldså & Maijer 1996).

WHITE-BROWED TAPACULO *Scytalopus superciliaris zimmeri*

Before the fieldwork of Fjeldså & Maijer (1996), known only from four specimens and one locality in Chuquisaca (Bond & Meyer de Schauensee 1940, 1942, Peters 1951). Fjeldså & Maijer (1996) found this endemic form to be widespread, but not abundant, in the semi-humid zone of southern Chuquisaca and Tarija Departments. We collected four specimens (CBF 02791, ZMUC 91755–7) accompanied by tape-recordings and blood samples, including the first known juvenile (ZMUC 91755), at L4, at 2500 m in *Podocarpus* and at 2900–3000 m in *Alnus* forest and immediately adjacent bunch-grass.

PEARLY-VENTED TODY-TYRANT *Hemitriccus margaritaceiventer*

One of a presumed pair observed was collected (CBF 02796) on 16 March (L2) at 2400 m. Previously known up to *c.* 2000 m (Ridgely & Tudor 1994).

GIANT CONEBILL *Oreomanes fraseri*

Three small groups seen at L1 on 8, 10 and 22 March 1995 are the first records from Chuquisaca. The species is fairly widespread, but vulnerable due to restriction to *Polylepis* forests, which are heavily fragmented from human exploitation.

RUFOUS-BELLIED SALTATOR *Saltator rufiventris*

Three were seen in and around the *Alnus* patch at Portillo on 10 April. Fjeldså & Maijer (1996) found this rare and threatened bird (Collar *et al.* 1992) at a few localities in Chuquisaca. One specimen collected (CBF 02812) on 8 April 1995 in a hedge around a vegetable garden at Portillo represents the first specimen from the department.

CITRON-HEADED YELLOWFINCH *Sicalis luteocephala*

In contrast to its local distribution in Cochabamba Department (Fjeldså & Krabbe 1990), this species is fairly common and widespread in the drier parts of Chuquisaca, where we recorded it at 23 different sites. It was previously known from only 16 sites, the majority in Cochabamba (Fjeldså & Krabbe 1990, Fjeldså & Maijer 1996). We saw them both in and away from villages, always in areas with some denudation of the soil and shallow, narrow quebradas, where they nested in holes. They were also seen nesting in stony bridges and rock crevices. Although most adults were feeding nestlings, one was constructing a nest on 22 March; the two females collected (CBF 02814, 02815) on 10 March and 5 April had brood patches, and a barely fledged juvenile (ZMUC 91745) was collected on 22 March.

COMMON DIUCA-FINCH *Diuca diuca*

Barely fledged young collected (CBF 02816) at L18 on 1 April and at L5 on 7 April (ZMUC 91746), prove breeding in Bolivia, and include the first specimen for Chuquisaca. The only other Bolivian records are specimens from Oploca, Potosí Department (Ridgely & Tudor 1989) and sight records from Culpina in Chuquisaca (Fjeldså & Maijer 1996).

GRASSLAND SPARROW *Ammodramus humeralis*

Five singing birds were seen and tape-recorded in open tall grassland at 2500 m on 13 and 18 March 1995. In Venezuela known up to 1750 m (Meyer de Schauensee & Phelps 1978), elsewhere not above 1100 m (Ridgely & Tudor 1989).

Acknowledgements

Our investigation was funded by the Center for Research on Cultural and Biological Diversity of Andean Rainforests (DIVA), an interdisciplinary project of collaboration between university institutions of Ecuador, Peru, Bolivia and Denmark. We are indebted to Alejandra Sánchez de Lozada and Eliana Flores of the Ministerio de Desarrollo Sostenible y Medio Ambiente for help, permission and encouragement to conduct this research. We also thank the director Lilián Villalba and the curator Jaime Sarmiento (MNHN) for help in all situations and support in obtaining an export permit for specimens. Special thanks are due to Omar Rocha O., who spent an immense amount of time helping us to buy a car for the expedition. We thank J. Fjeldså and S. Maijer for their comments on the paper and we are grateful to J. V. Remsen, Jr. and T. S. Schulenberg for reviewing the manuscript.

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Forbes's Plover *Charadrius forbesi* breeding in Central Africa

by J. F. R. Colebrook-Robjent & J. E. Griffith

Received 8 December 1995

On 7 October 1990 we found a nest of Forbes's Plover *Charadrius forbesi* with 3 eggs at the Zambezi rapids, Mwinilunga, North Western Province, Zambia, 11°08′S, 24°10′E. This very local species has been reported from scattered localities in Zambia, the Lukanga Swamp, Central Province, being the limit of its southerly range (Benson *et al.* 1971). There were no previous breeding records, but Tree (1969) reviewing the status of waders in Zambia suggested that this species might breed at Mpulila Pan, Ndola, where collected specimens showed slight gonad activity in August 1963.

The nest was discovered in mid-morning. We had been walking in line over an expanse of exposed, whale-backed, black rock, at no great height above, and 300 m from, the Zambezi River. We saw a Forbes's Plover fly low towards and then between us, and settle on a somewhat higher level rock slab. We hid ourselves as best we could in the sparse and scattered cover of short, whispy dry grass, after which the plover ran down the rocky slope and settled on its eggs. The nest site was situated on a 30° angle of sloping rock of a cul-de-sac, i.e. it was not on the main, rather uniform expanse of rock, but at one side of this feature. The nest consisted of a shallow cup of dark grey, very small, coarse and angular stones (grit), varying in size from 10 × 8 down to 3.5 × 3 mm, the structure measuring 70 mm in diameter and 20 mm in depth. The 3 eggs measured and weighed 29.2 × 23.4 (8.6 g), 28.8 × 23.4 (8.3 g) and 28.7 × 23.8 (8.9 g) mm. The eggs are beautiful and distinctive. Their shape is short blunt oval, texture matt, the ground creamy-pink which is handsomely blotched warm brownish-wine over shell smears of lilac-grey. Incubation had only recently begun. Once the nest had been found the incubating bird showed little fear and readily returned to the eggs despite our close proximity.

Discussion

This is the first breeding record for Central Africa, 18 nests with eggs having been found in Nigeria, West Africa. Brown (1947, and in Bannerman 1951) was the first to discover the nest of *C. forbesi*, on the top of a granite inselberg, 500 ft above the canopy of surrounding woodland, in the Ilorin district. Later, in 1954, Serle (1956) collected C/3 of this species at Enugu, a distance of approximately 2500 (± 100) km from the present record. The less than adequate description of 3 eggs in Urban *et al.* (1986) was taken from Serle (1956) who, however, fully described his eggs together with their precise measurements and illustrated his paper with a photographic plate.

Authors have emphasised the similar appearance between Forbes's Plover and Three-banded Plover *C. tricollaris*. Bock (1958) down-graded *forbesi* to a subspecies of the latter, this decision being followed

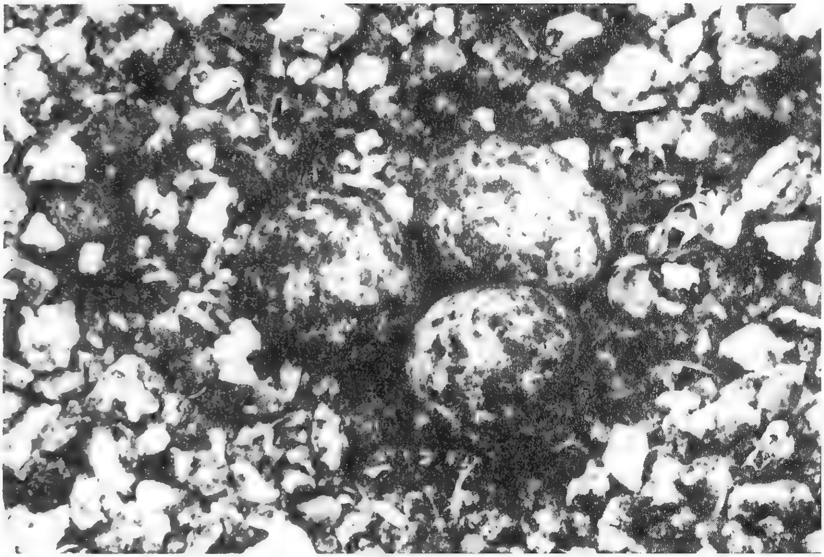

Figure 1. Eggs of Forbes's Plover. Zambezi Rapids, Zambia, 7 October 1990.

by Johnsgard (1981), and Jehl (1968) does not mention or list *forbesi* in his study of the downy young of shorebirds. Snow (1978) places *C. tricollaris* and *forbesi* in a species-group, commenting on "the evolution of the two species from a single widespread common ancestor" (p. 183). Urban *et al.* (1986) go further and consider them to be members of a superspecies and Marchant *et al.* (1986) also consider them to be close relatives. We do not agree with any of the foregoing, rather we concur with Sibley & Monroe (1990) that these two species are "different morphologically" (p. 217). We are especially impressed by the differences in the eggs, as previously pointed out by Serle (1956). However, in our opinion, the choice of the egg specimen of *C. tricollaris* photographed alongside the egg of *forbesi* in Serle's paper is unrepresentative. This egg is clearly depicted as subelliptical in shape and densely and evenly covered in scrawls, which makes it appear more like *Cursorius africanus* than a typical egg of *C. tricollaris*. One of us (J.C.R.) has examined 64 eggs of *C. tricollaris* in Zambia and none have been subelliptical, but all were pyriform or pointed oval. The eggs of *tricollaris* are indeed well marked with fine scrawls or hair lines of black or dark brown, but seldom evenly spread over the surface and most often concentrated in one, two or three heavy bands around the egg. The ground varies from cream to pale ivory-yellow. The egg specimen of *forbesi* in Serle's plate is a good example and is much like our own from Zambia, though ours are shorter and more rounded. The best and fullest description of the eggs of *tricollaris* is by James (1922), based on the study of 200 nests which he had found in South Africa. By comparison the average size of 60 eggs of *C. tricollaris* from Zambia is 29.1 × 22.1 mm and the average weight of 14 freshly laid eggs was 7.69 g (6.9–8.8). All clutches were invariably of two eggs, as were the many more found by James. In contrast, Brown (1948) found clutches of *C. forbesi* to be either of two or three eggs, ours and Serle's being of the latter size.

Egg characteristics are similar in some undoubtedly closely related species of *Charadrius*. An obvious example of similar, but not identical, eggs, are those laid by Kittlitz's Plover *C. pecuarius* and its Atlantic island relative *C. sanctaehelenae*. More significant, perhaps, is another example shown by the huge geographical range of the Kentish Plover *C. alexandrinus* combined with its relatives *marginatus*, *pallidus* and *ruficapillus*, the eggs of which all show much the same characteristics. Though we make no claim that eggs are always an infallible guide to relationships, we emphasise that the eggs of *C. forbesi* show no similarities to those of *C. tricollaris* and do not support a close relationship between these two species.

Acknowledgements

We thank D. R. Aspinwall for commenting on an early draft of this paper and J.C.R.'s collector Lazaro Hamusikili for his usual excellence in the field.

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Further notes on little-known plumages of the Crested and Loria's Birds of Paradise *Cnemophilus macgregorii* and *C. loriae*

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Received 8 November 1995

The congeneric Crested and Loria's Birds of Paradise *Cnemophilus macgregorii* and *C. loriae* are two conspicuously sexually dimorphic species of the three constituting the subfamily Cnemophilinae of the Paradisaeidae, confined to mountains of New Guinea. The third species is the Yellow-breasted Bird of Paradise *Loboparadisea sericea*. For details of adult male and female plumages, geographical distributions and altitudinal ranges see Gilliard (1969), Cooper & Forshaw (1977) and Beehler *et al*. (1986).

Adult female and immature male plumages of the two *Cnemophilus* species were long known to be generally uniform brownish-olive (*C. macgregorii*) and greenish-olive (*C. loriae*), until a grey plumage was discovered in a few specimens of each species the significance of which was and presently remains difficult to assess (Frith 1987, Frith & Harrison 1989).

An advanced nestling Crested Bird of Paradise photographed at the nest with its mother was clearly in a uniform grey plumage contrasting conspicuously with its brownish-olive parent (Frith, in Coates 1990), suggesting the possibility of a distinctive juvenile plumage in this species. A specimen collected at Mt. Hagen and described as juvenile (Gilliard 1954) has a short wing and is in a generally grey-green plumage with downy underparts and with the tail feathers obviously pointed at their tips. As the Yellow-breasted Bird of Paradise has distinctive juvenile plumage (which all typical birds of paradise, of the Paradisaeinae, do not) it was considered possible that all three member species of the Cnemophilinae have a juvenile plumage different to that of their respective adults (Frith & Harrison 1989).

The 'grey' plumage of an unsexed specimen (19.9.1963) identified as a Crested Bird of Paradise *C. macgregorii* was first noted by me in 1971 as a result of a casual examination of birds of paradise in the Alexander Koenig Museum, Bonn, Germany. I was unable to personally re-examine this specimen but C. J. O. Harrison did so at the Natural History Museum, Tring, in 1988 and the 'grey' plumage of this specimen was attributed to *C. macgregorii* (Frith & Harrison 1989). Female-plumaged individuals of *C. macgregorii* and *C. loriae* are extremely similar. A live bird and a photograph of it was misidentified by no less an authority on the birds of paradise than Fred Shaw-Mayer (in Gyldenstolpe 1955 and Sims 1956), but this error was subsequently pointed out by E. Thomas Gilliard and Ernst Mayr and corrected in a subsequent book by the photographer (Loke 1957). Nevertheless female-plumaged birds of both species are sufficiently different to be identified in the hand by workers specializing in the group.

In 1995 I made a study tour of the majority of all major bird of paradise collections about the world and was able to examine 138 specimens of *C. macgregorii*, comprising 62 adult males, 12 subadult males (some adult feathering in otherwise brownish-olive female-like plumage), 24 immature males (in female plumage), 34 females and 6 unsexed birds in female plumage. A total of 268 *C. loriae* specimens was examined, comprising 118 adult males, 24 subadult males (some adult black feathering in otherwise green female-like plumage), 37 immature males (in female plumage), 83 females and 6 unsexed birds in female plumage. The results were as follows.

Cnemophilus macgregorii

When the Alexander Koenig Museum specimen 19.9.1963 from Wurup, Kubor Range, identified as *C. macgregorii* was re-examined, it was immediately apparent that it is not *C. macgregorii* but is in fact a specimen of *C. loriae*.

The grey-plumaged Alexander Koenig Museum specimen 29.12.1963 from Tomba, Mt. Hagen, was also re-examined and confirmed to be *C. macgregorii*, as described by Frith & Harrison (1989). In view of the mis-identification just mentioned it was in fact, then, the only specimen of this species known in any plumage other than that of the normal adult male and female/immature male plumage. During recent studies of extensive *C. macgregorii* material two additional interesting specimens were examined. In describing these two specimens the capitalised names (and numbers) of colours used are those of Smithe (1975) and uncapitalised colour names are used if those of Smithe are considered inappropriate.

Crested Bird of Paradise *C. macgregorii* specimen P15, 183/3 and/or 66.2 of the Zoological Museum of Hamburg, Germany, was collected by D. v. Holst in December 1963 at "Waghi-Tal, NO New Guinea etwa 5,50°S, 144,15°O". It is said by the preparator to be an adult female and it is in a most interesting plumage: Chin, throat and breast a smoky greyish-brown very like Grayish Horn Color (91) with darker feather tipping giving a faint scaled appearance. Remaining underparts distinctly paler, being closest to Drab-Gray (119D) but washed in places, and much so on the flanks, with Grayish Horn Color. Thigh feathering Grayish Horn Color with a rufous wash to it. Top of head Dark Brownish Olive (129) and lores and sides of head Brownish Olive (29). The mantle is Dark Brownish Olive with slight and variable deep russet and olive washes, and the back, rump and upper tail are Russet (34) with variable olive suffusion, the feather centres being more pure Russet. Visible closed wings are mostly Russet with a rich Chestnut (32) wash, notably on leading edges of inner primaries and the secondaries. Crest feathers are Maroon (31). Thus this bird, apparently an adult female, is not in a truly grey plumage but is generally fawn below and russet-olive above. Its upperparts are therefore not very different from normally female-plumaged birds.

The Hamburg bird and the Alexander Koenig Museum specimen 29.12.1963 were examined together at Tring. The Hamburg specimen is generally like the Bonn one but is a good deal browner (rather than grey) throughout, especially on all upperparts and the chin, throat, breast and flanks.

In addition a mounted unsexed specimen of *C. macgregorii* (CG 1898 1381) in the Muséum National d'Histoire Naturelle, Paris, collection from "Astrolabe" (Astrolabe Mountains, Papua New Guinea) was examined and found to be in an interesting 'fawn' plumage similar to that of the Hamburg specimen. This Paris specimen could not be examined comparatively with other pertinent specimens but judging from photographs taken of both it is perhaps a little darker and browner throughout than the Hamburg specimen.

Cnemophilus loriae

Given that specimen 19.9.1963 of the Alexander Koenig Museum is not *C. macgregorii* as described by Frith & Harrison (1989) but is in fact *C. loriae*, the completely grey plumage in *C. loriae* was, then, known in two specimens, the other being specimen 0547 from the collection at the Baiyer River Sanctuary in Papua New Guinea. Two specimens were also known in intermediate plumage between the normal 'green' female and the 'grey' (Papua New Guinea Museum 20743 & 20773) (Frith 1987). Unfortunately the Baiyer River Sanctuary specimen was recently destroyed by fire, along with all other bird skins held there, leaving the Alexander Koenig Museum specimen 19.9.1963 the only one in the complete 'grey' plumage.

In the course of my studies, however, I discovered two additional *C. loriae* specimens in interesting plumage. Skin P15, 182/2 and/or 66.3 in the Zoological Museum Hamburg was collected at "Bulldog/Lake Kamu River etwa 7,35°S, 146,30°O" by D. v. Holst on 20 July 1963. It has a single blue-black feather in the rear crown and is therefore clearly a male that would have presumably acquired subadult plumage with its next moult. As males of most sexually dimorphic birds of paradise appear to take five or more years to acquire the first signs of adult plumage (Aruah & Yaga 1992), this individual is probably at least four to five years old. It is in a plumage intermediate between the normal 'green' female and the 'grey' plumage. It is not, however, 'grey' with some green feathers, as previously described for another specimen (Frith 1987), but the overall plumage (i.e. each feather) is intermediate in colour: Underparts far less green than in typical female-plumaged *C. loriae*, the chin, throat and breast being Grayish Olive (43) with darker, Olive (30), tipping to feathers giving a marked scaled appearance. The abdomen and belly are considerably paler, being Smoke Gray (44), darker in places with a wash of Grayish Olive and a slight yellowish wash lowermost and centrally. Flanks darker, being strongly washed with Grayish Olive. Thigh feathering pale Olive-brown (28). Top and sides of head darker than chin and throat, being Brownish Olive (29) with darker feather tipping, almost blackish-grey, giving a scaled appearance. Back and rump Olive with the centres of larger mantle and back feathers strongly over-pigmented with Olive-Brown to give a grossly scalloped appearance. Upper tail Olive-Brown with strong Raw Umber (23) wash and the visible closed wing predominantly Raw Umber to dark Raw Umber. In general this bird looks more like the 'grey' plumage of *C. loriae* than the typical 'green' female plumage.

The second specimen in interesting plumage was Natuurhistorisch Museum, Leiden specimen 19100, a male, collected at Araboebivak on 4 November 1939. It is juvenile to immature in age and is in a plumage much greyer than that typical of adult females and female-plumaged young males. It is a mid-grey colour throughout, save for rufous leading edges to wing primaries and a slight rufous wash on the upper tail. It is darker on the back, which is closest to, but darker than, Glaucous (79). Underparts are closest to Smoke Gray, being darker on the chin, throat and upper breast.

Conclusions

Of the three members of the Cnemophilinae, *L. sericea* has a juvenile olive-brown plumage with cinnamon (123A) underparts broadly streaked by darker feather edging that is distinctly different to its adult plumages. *Cnemophilus macregorii*, and probably also *C. loriae*, has a generally uniform grey juvenile plumage that may persist as immature plumage in some populations or in some individuals of some populations. Some individuals of *C. loriae* are, moreover, known in which the plumage is intermediate between the normal, generally 'green' plumage of females and immature males and the recently described 'grey' plumage. Such birds may have some grey feathers among the green ones or may have the whole plumage intermediate in colour.

In *C. macgregorii* two specimens are known in a different plumage, one being generally fawn but with some upperparts washed brown-olive or olive, and the other a slightly darker fawn throughout. The significance of the 'grey' plumages in both *Cnemophilus* species, and particularly of the fawn ones in *C. macgregorii*, remains inadequately understood.

Acknowledgements

I sincerely thank Dr R. van den Elzen of the Alexander Koenig Museum, Bonn, Dr H. Hoerschelmann of the Zoological Museum, Hamburg, Dr René Dekker of the Natuurhistorisch Museum, Leiden, and Dr Eric Pasquet of the Muséum National d'Histoire Naturelle, Paris, for access to specimens in their care, and Professor Dr D. S. Peters, Fräuleins Martina Küsters and Karin Böhm of the Natur-Museum Senckenberg, Frankfurt, for loan and work facilities there. Drs Bruce M. Beehler, Dawn W. Frith and Colin J. O. Harrison kindly commented constructively on a draft of this note and Dawn W. Frith assisted greatly with all aspects of museum work.

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Sexual dimorphism in the Javan Hawk-eagle *Spizaetus bartelsi*

by Vincent Nijman & Resit Sözer

Received 4 December 1995

The Javan Hawk-eagle *Spizaetus bartelsi* is considered to be one of the world's least known raptors (van Balen & Meyburg 1994). It is endemic to the island of Java, Indonesia, where it is confined to the lowland and montane forest areas. Although in the last few years new information has been accumulated on its distribution and status (van Balen & Meyburg 1994, Sözer & Nijman 1995b) and some data have been added to our knowledge of aspects of its behaviour (van Balen *et al.* 1994, Nijman & Sözer 1995a), the knowledge we have of the species remains limited. Very little is known about demography and population dynamics, as is the case with many other rain-forest raptors (*cf.* Thiollay 1994). The total number of breeding pairs throughout the island is estimated at between 81 and 108 (Sözer & Nijman 1995a). By virtue of this low number, continuing habitat loss and trade the species is considered to be endangered according to the IUCN threat criteria (Collar *et al.* 1994).

Birds of prey are amongst the few groups of birds in which reversed size dimorphism has evolved, the female being larger than the male. The size differences in some species may be slight and barely noticeable, while in others the female may weigh almost twice as much as her mate (e.g. European sparrowhawk *Accipiter nisus*; Opdam 1975). This degree of size difference between the sexes is also linked to

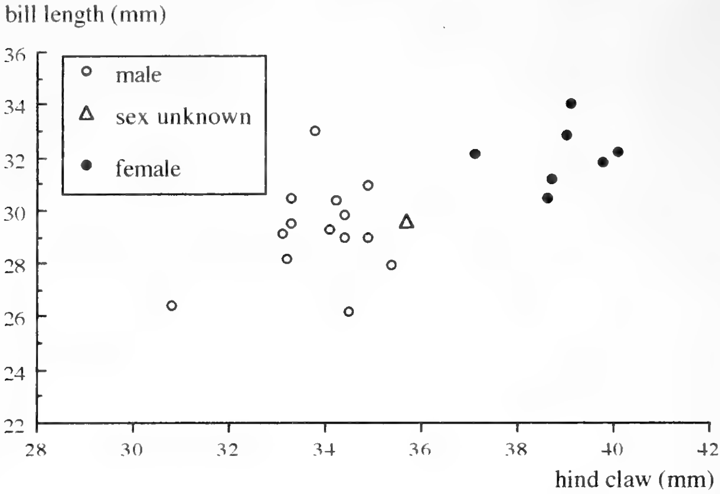

Figure 1. Sexual dimorphism in Javan Hawk-eagle *Spizaetus bartelsi* expressed in bill length-hind claw length differences.

feeding habits. In general, the faster and more agile the prey, the greater the degree of dimorphism in the raptor. Thus, there are no consistent size differences between the sexes in carrion feeders or, if there are, the male is bigger than the female, as in non-raptorial birds; and the most dimorphic of all are the predators on birds (Newton 1979). In general, the more dimorphic a raptor species is the larger the prey is relative to the body size of the raptor. Hitherto, sexual dimorphism has not been reported for the Javan Hawk-eagle, but it is known for other members of the same genus (e.g. *S. ornatus*, Klein *et al*. 1988, Dunning 1994; *S. nipalensis*, Dunning 1994).

In this paper we present data on sexual dimorphism in the Javan Hawk-eagle, based on study of bird skins and, to a lesser extent, field data. Measurements were taken of 23 skins, held in the collections of the National Museum of Natural History, Leiden, the Netherlands (hereafter RMNH) and the Zoological Museum, Bogor, Indonesia (MZB). The sample consisted of 16 males, 6 females and one of unknown sex (a downy chick in the collection of the RMNH was excluded from the sample).

As shown in Figure 1, the segregation of male and female Javan Hawk-eagles, expressed in hind claw/bill length, is complete. The segregation is also evident when expressed in tail/wing length (Sözer & Nijman 1995a). A skin of unidentified sex (MZB No. 17347), an immature with an estimated age of three years, is grouped with the males. In the field the distinction between male and female, especially when seen together or shortly after one another, is also clear. The female is larger and more robust, although still with the slender appearance characteristic of the species.

The degree of difference in the hind claw and bill between the sexes suggests that there are probably differences in the diets of male and female. Unfortunately the diet of the Javan Hawk-eagle is little known. Reported items include: large fruitbat *Cynopterus* sp., stink-badger *Mydaus javanensis*, a squirrel, rat-sized mammals, lizard and snake, and chicken *Gallus* sp. Sody (1920) stated that a juvenile Javan Hawk-eagle (identified by him as a Changeable Hawk-eagle *Spizaetus cirrhatus*) kept by him as a pet refused to take mammalian meat. The matter remains open for further research.

Acknowledgements

In Java, the research was made possible due to the co-operation of the Directorate General of Forest Protection and Nature Conservation (PHPA) and the Indonesian Institute for Science (LIPI). We are grateful to Dr R. W. R. J. Dekker (RMNH), and the director and staff of the Zoological Museum Bogor, for allowing us to examine the bird skins under their care. Dr A. J. Fielding commented on an earlier draft. We thank Kees Roselaar for his help.

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The distribution of the Masked Weaver *Ploceus velatus* in Angola

by W. R. J. Dean

Received 5 December 1995

The Masked Weaver *Ploceus velatus* has a fairly restricted distribution in Angola. The species is mainly confined to semi-arid southern and southwestern Angola, and along the coastal plain below the escarpment from Namibe Province to about Luanda, Bengo Province.

In the course of preparing an annotated check-list of the birds of Angola, I have examined the records of *P. velatus* critically and have concluded that the Angolan distribution of *P. velatus* may be summarised as follows:- *Ploceus velatus finschi* is a common resident in riverine woodland in savanna and broad-leaved woodlands from southwestern Namibe Province north along the coastal plain to Luanda, generally west of 14°E; *P. velatus caurinus* occurs from the Namibian border through Cunene Province, southern and western Huila Province and western Benguela Province, generally south of 16°S, but extending north to about 12°S in the west (Clancey 1974). There are peculiarly isolated populations at Lakes Cameia (11°38′S, 20°54′E) and Dilolo (11°31′S, 22°02′E), Moxico Province, referred to *P. velatus tahatali* by Pinto (1965) but more likely to be *P. velatus shelleyi* (Louette 1984). Pinto (1965) considered *P. velatus* to be common in the area, at least around Lake Dilolo.

In a careful review of the identity of swamp-dwelling weavers in Angola, Louette (1984) concluded that some of the specimens collected by Pinto at L. Cameia and L. Dilolo and at present in the Centro de Zoologia, Lisbon, are *P. velatus*, probably *P. velatus shelleyi*. However, he was unable to examine the specimens collected at L. Dilolo and listed by Pinto (1965), since these are (presumably) in the collection of the Instituto de Investigação Cientifica de Angola (IICA) in Lubango, now inaccessible due to the civil war in Angola. The specimens may be in the collection at the Museu do Dundo (now Chitato) but, if so, are not listed by Pinto (1973).

The Lakes Cameia and Dilolo specimens apparently represent the furthest north occurrences of *P. velatus* in eastern Angola. The record of a breeding colony of *P. velatus* on the Luachimo River at Dundo (Chitato), Lunda Norte Province (Günther & Feiler 1986) is questionable. This record, if verified, would extend the distribution east and considerably north of any previous locality for *P. velatus* in Angola (see Map 331 in Hall & Moreau 1970). Benson *et al.* (1971) did not record *P. velatus* in northwestern Zambia, but it does occur throughout western Zambia, south of Lakes Cameia and Dilolo (R. J. Dowsett, pers. comm., citing unpublished Zambian atlas data). However, Schouteden (1964, 1965a, 1965b) did not record *P. velatus* in any of the districts of Zaire adjacent to northeastern Angola, so the Lakes Cameia and Dilolo populations of *P. velatus* would appear to be truly isolated. In view of this isolation, it is imperative that breeding males of the *Ploceus* species at Lakes Cameia and Dilolo are collected and examined. Furthermore, the L. Cameia and L. Dilolo specimens were collected in reeds. If the birds are nesting in reeds at L. Cameia and L. Dilolo (unusual for *P. velatus*; see Clancey 1974, Louette & Benson 1982), it is even more important that the identity of the Cameia and Dilolo specimens be firmly established. It is possible that the birds may be a new taxon of swamp-dwelling weaver, larger than the *P. reichardi* group (suggested by M. Louette, *in litt.*).

It seems certain that the breeding colony of weavers on the Luachimo River observed by Günther & Feiler (1986) was not *P. velatus*. No specimens of the breeding birds were collected, and there is no other evidence to support the identification of the breeding birds as *P. velatus* (R. Günther pers. comm., A. Feiler *in litt.*). The only black-faced weaver known to occur in northern Lunda Norte is *P. cucullatus* (Traylor 1963), but *P. melanocephalus duboisi* has been recorded at Lusambo, Sankuru District, Zaire (Schouteden 1964) and could occur in Lunda Norte. The only other masked weavers that could conceivably be confused with *P. velatus* in the field are *P. intermedius* and *P. pelzelni*, neither of which occurs anywhere near northern Lunda Norte. Furthermore, the locality of the breeding colony is in an area where the mean annual precipitation exceeds 1400 mm. *Ploceus velatus* tends to be a species widespread in arid regions (Clancey 1974), and, with the exception of the isolated population in Moxico Province, is apparently restricted to the area of Angola where the mean annual precipitation is <400 mm. The distribution of *P. velatus* in Angola is thus substantially that shown by Clancey (1974), and supported by Louette (1984). *Ploceus velatus* is unlikely to occur in northeastern Angola.

Acknowledgements

I thank Dr P. A. Clancey and Dr M. Louette for comments on this note, and Dr Rainer Günther and Dr Alfred Feiler for their helpful responses to my request for further information on *Ploceus velatus* in Angola.

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Amazona kawalli is a valid name for a valid species

by *N. J. Collar & A. J. Pittman*

Received 8 December 1995

Grantsau & Camargo (1989) gave the name *Amazona kawalli* to a form of parrot very close to the Mealy Amazon *A. farinosa* but which they judged to possess several distinctive diagnostic features. The new form was described on the basis of one dead captive bird, two live captive birds, and two old, misattributed museum specimens. Vuilleumier *et al.* (1992) implied that Grantsau & Camargo (1990) provide additional data in a table of measurements, but in fact these measurements are present, albeit not in tabular form, in the original description.

This unusual circumstance (descriptions of new species of parrot are not frequent) resulted in modest publicity (e.g. Low 1990, Anon. 1991, Arndt 1991) but not outright acceptance. Vuilleumier *et al.* (1992) felt that "there is not enough evidence at present to decide what the status of this form is", and listed it as a *species inquirenda*. More emphatically, Bosch (1991), having first speculated whether subspecific rank would not be more appropriate, came to agree with the late H. E. Wolters (of Museum Koenig, Bonn, and a member of the Standing Committee on Ornithological Nomenclature of the International Ornithological Congress), to whom he referred the description, and who considered that *kawalli* merely represented individual variation within *A. farinosa*. This was also the judgement, quoted by Grantsau & Camargo (1989), of Pinto (1935; also Pinto & Camargo 1954), in whose care the two museum specimens of *kawalli* remained for many decades. Largely because of these doubts, and despite its inclusion by Sibley & Monroe (1993), who may not have been aware of the caution being expressed in some quarters, the new form was not considered in recent reviews of threatened species (Collar *et al.* 1992, 1994), despite its potential categorisation as Data Deficient or near-threatened. However, the problem was clearly of continuing concern in taxonomic, conservation and avicultural terms, so, with the discovery of two specimens attributable to *kawalli* in European museums, we took steps to investigate the matter further.

Two European specimens of *Amazona kawalli*

The most distinctive feature of prepared specimens of *kawalli* (in its separation from *farinosa*) is red chiefly on the inner proximal webbing of several outermost tail feathers. However, because tails of museum skins are normally preserved in the closed position, it is possible that examples of the species have remained undetected in collections, labelled as either *Amazona farinosa* or Scaly-naped Amazon *A. mercenaria*, which is also very similar and indeed shares the general tail pattern.

In September 1990 the aviculturist for whom the new form is named, N. Kawall, himself picked out a (female) specimen of *kawalli* amongst the series of *mercenaria* held at the Natural History Museum (BMNH) in Tring, U.K. This bird (BMNH 1891.4.1.48) had been received alive by the Zoological Society of London on 2 May 1882 and had died there on 1 June 1883, the skin being labelled both "*Chrysotis mercenaria*" and "*Chrysotis ochrocephala* var.", although it was exhibited under the former name (Anon. 1883). After Kawall's reidentification, it was duly transferred to a separately labelled tray, but its presence was not otherwise advertised. NJC encountered this specimen by chance in 1992 while working on other material.

Then, while visiting the Zoological Museum in Berlin (ZMB) in June 1995, J. Cuddy and AJP found a specimen corresponding closely to *Amazona kawalli* while checking the series of *farinosa*. This bird, a male (ZMB 23.1.160), bore a red type label inscribed "*Amazona farinosa* aberr. *rubricauda* Str.". Inquiry duly revealed that a description of this specimen, using the formulation quoted, had been furnished by Stresemann (1924), who reported that it, too, was a captive bird that had lived in Berlin Zoo from June 1910 until its death in September 1923.

Comparisons of the two "new" specimens

We obtained the loan to BMNH of Stresemann's specimen for comparison with the skin identified by Kawall. In October and November 1995, we reviewed this material and checked it against samples of each of five usually recognised subspecies of *A. farinosa* and the small available series of *A. m. mercenaria*. We took no steps, however, to obtain the loan of one of the paratypes in São Paulo, basing our judgement simply on the original description.

Grantsau & Camargo (1989) identified eight characters that they believed to be diagnostic of *kawalli* when compared with *farinosa*. These were (1) bill dull yellow and grey (in living birds); (2) white strip of bare skin bordering base of bill (dull yellow after death); (3) dark grey periorbital ring (in living birds); (4) edge of folded wing light yellowish-green with no trace of red; (5) general colour much purer green; (6) colour of outer tail-feathers patterned with red and blue; (7)

proportion of terminal yellowish-green forming tail-band reduced (*c.* 20 mm instead of *c.* 40 mm); (8) apparently smaller size.

We assessed these parameters in the two "new" skins of *kawalli* and added to them the colour of the crown, the colour of the legs, and the number of rectrices. We ourselves noted that there were possibly consistent features in the crown and leg colour, while the number of rectrices was mentioned by Stresemann (1924), who counted 14 in the Berlin male. (Stresemann also incidentally remarked on the absence of red on the wing edge of his specimen, and the reduced width of its tail band; he did not comment on its bare facial patch, possibly assuming that this was the result of a particular behaviour in captivity).

The two *kawalli* are extremely similar in appearance, but the male appears to be larger, with a discernibly stouter bill (in both depth and breadth), and has a far more obvious facial patch; the female has the leading primary of one wing (the right) yellow, and the shafts of some feathers under the eye are rufous, giving each cheek a slightly ruddy tinge. The following is a composite description of the two birds.

> The bill is dull creamy white on the lower mandible, pale slate on the upper mandible but with the base below the cere creamy white (and slightly raised to form a plate). Apart from bare skin on the cere, around the eye and bordering the bill, the head is green, the feathers on the mid-crown with slight black edging, becoming increasingly pronounced on the nape and mantle, so that the mantle has a scaly appearance (and the green in this one area possesses a slight floury tone). The feathering around the periorbital skin is a brighter, slightly bluish, green. The sides of the neck, the throat and the upper breast are bright iridescent green, becoming matter and slightly darker on the lower breast and belly, with very faint irregular barring or scaling caused by thin dark edges to feathers (virtually invisible in the female). The abdomen and thighs are slightly lighter green, and the undertail-coverts are greenish-yellow. The wing-coverts are green, with an indistinct yellowish patch along the edge below the carpal joint. The primaries (only partly accessible) are green on the proximal and bluish on the distal half of the outer vane, black on the inner vane. The speculum is red. The back and rump are green, the uppertail-coverts likewise but with very slight yellowish-green iridescent edges. The tail is green for three-quarters its length, with a greenish-yellow terminal band. At least two (and in the case of the male four) of the outermost rectrices have red on the inner half of both vanes, in some cases bordered distally with brownish-black (there is a fringe of blue on the outer vane of one outermost rectrix of the male).

The plumage differences of these birds from *farinosa* are consistent with those given by Grantsau & Camargo (1989), and are presented with our own data for both *farinosa* and *mercenaria* in Tables 1 and 2 (Table 2 including measurements from a third "new" specimen of *kawalli* reported below). As must be clear from the evidence both above and below, we conclude that all three "new" specimens should be formally reassigned to the new species *Amazona kawalli*.

A third specimen (in Brazil) and published photographs

Grantsau & Camargo (1989) mentioned that Kawall had indicated to them the presence of a specimen of *kawalli* in the Museu Paraense Emílio Goeldi, in Belém, Pará, Brazil. They did not, however, make further reference to this bird, other than to report its provenance as Santarém, Pará. However, D. C. Oren (*in litt.* 1995) kindly reports that

TABLE 1

Points of comparison in the plumage of three species of *Amazona*. In column for number of rectrices, the number in brackets is the number of specimens; in the case of the Berlin *A. kawalli*, one of the 14 feathers had been removed and left with the specimen. Material consulted (all BMNH except the Berlin *kawalli*): *A. f. chapmani* 89.1.30.313, 89.1.30.312, 91.1.23.81, 91.1.23.79, 1902.3.13.1406; *A. f. virenticeps* 1949.58.133, 72.5.29.4, 90.6.1.187, 89.1.30.317, 89.1.30.319; *A. f. inornata* 91.2.12.38, 91.2.12.40, 91.2.12.39, 1936.1.21.357; *A. f. guatemalae* 89.1.20.646, 61.7.16.1, 89.1.30.316, 65.5.19.74, 89.1.30.314; *A. f. farinosa* 1922.3.5.1237, 1922.3.5.1230, 1922.3.5.1228, 1922.3.5.1235, 1995.6.1; *A. kawalli* 1891.4.1.48, ZMB 23.160; *A. m. mercenaria* 1902.3.13.1407, 1902.3.13.1408, 89.1.30.346.

	Leg colour	Bill colour	Facial patch	Ocular ring	Crown	Body	Wing edge colour	Number of rectrices	Tail pattern
A. f. guatemalae	brownish-black	variable: mostly pale slate, patchily dull creamy	no	large, pale	greenish-blue	floury glaucous green	yellowish-green	12(5)	proximal two-thirds dark green, distal third light green
A. f. virenticeps	brownish-black	variable: mostly pale slate, patchily dull creamy	no	large, pale	bluish-green	floury glaucous green	yellowish-green	12(4); 8(1)	proximal two-thirds dark green, distal third light green
A. f. chapmani	brownish-black	variable: mostly pale slate, patchily dull creamy	no	large, pale	green, greyish on hind crown	floury glaucous green	red, fringed pale yellow-green	10(3); 7(2)	proximal two-thirds dark green, distal third light green
A. f. inornata	brownish-black	variable: mostly pale slate, patchily dull creamy	no	large, pale	green, greyish on hind crown	floury glaucous green	red, fringed pale yellow-green	12(4)	proximal two-thirds dark green, distal third light green
A. f. farinosa	brownish-black	variable: mostly pale slate, patchily dull creamy	no	large, pale	green (some with yellow mid-crown)	floury glaucous green	red, fringed pale yellow-green	12(4); 10(1)	proximal two-thirds dark green, distal third light green
A. kawalli	pale brown	creamy-white, pale slate on culmen	yes	fairly small, pale	green	green	yellowish-green	13+1(1); 11(1)	proximal three-quarters green, distal quarter yellowish-green; with red and blue on outer feathers
A. m. mercenaria	brownish-black	dark	no	small, pale	green	green	red/yellow interspersed	12(1); 10(1); 6(1)	proximal four-fifths green, distal fifth yellowish-green; red on inner part of distal half of five outer feathers, blue on outer vane of outermost

TABLE 2

Mean measurements (in mm), with standard deviations and ranges, of three species of *Amazona*, taken from the same specimens used for Table 1, with the inclusion of those for MPEG 14.804 from Table 3. All bills were measured cere to tip, and all wings curved.

	Bill	Wing	Tail
Amazona mercenaria (*n*=3)	29.2, s.d. 1.15 (28.1–30.4)	222.7, s.d. 7.1 (215–229)	98.7, s.d. 4.4 (93.7–101.5)
Amazona farinosa (*n*=24)	37.9, s.d. 2.19 (33.8–43.0)	251.9, s.d. 10.67 (232–274)	136.5, s.d. 9.59 (121.0–153.4)
Amazona kawalli (*n*=3)	37.6, s.d. 1.68 (36.2–39.5)	252.3, s.d. 10.59 (241–262)	117.0, s.d. 3.43 (113.9–120.7)

TABLE 3

Measurements (in mm) of three specimens of *Amazona kawalli*. Those for the MPEG bird were taken by D. C. Oren. All bills were measured cere to tip, and all wings curved.

	Sex	Bill	Wing	Tail
ZMB 23.160	male	39.5	262	113.9
BMNH 1891.4.1.48	female	36.2	241	116.5
MPEG 14.804	female	37.25	254	120.7

the specimen, an adult female (MPEG 14.804), was collected not at Santarém but at Itaituba (4°17′S, 55°59′W), Pará, on 7 November 1955, by J. Hidasi; its label also states "forest" and "fruits". It possesses all eight characters mentioned in Grantsau & Camargo's diagnosis. In addition, Oren notes that its grey periorbital ring is smaller in extent that the white one of *farinosa*; that the feathers above and behind the eye have a definite bluish tinge to them, almost forming a superciliary stripe; and that the width of the tail-band is 30 mm as against the 60 mm or so that are usual for *farinosa*. His measurements of it are in Table 3.

At least three colour photographs of specimens of *kawalli* have been published, one of them in several places. This last, taken by T. Brosset, can be seen in Bosch & Wedde (1981), Pinter (1988), Anon. (1991), Alderton (1991) and Arndt (1991). According to Low (1990) it depicts a bird living in London Zoo from at least the early 1970s until the mid-1980s, exhibited as a *farinosa* but which she had judged ten years earlier (in Low 1980) to be a *mercenaria* (although she specifically noted, as "an interesting feature", "the wide area of bare white skin on each side of the lower mandible"). T. Brosset (verbally 1995) has confirmed that he took this photograph in London Zoo in 1975; Bosch & Wedde (1981) captioned it as *A. farinosa virenticeps*, Pinter (1988) as *A. f. farinosa*. However, at least four diagnostic features are evident: the facial skin at the base of the bill is bare and white, the periorbital ring is grey (and small), the tail shows red bases to the outer feathers, and the terminal band is only about one-quarter the tail length. Moreover, the bill is apparently grey and yellow, the leading edge of the wing looks to have no red, and the coloration seems to lack typical *farinosa* mealiness. As Low (1992) remarks that *kawalli* is not known outside Brazil, we conclude that this bird is dead, but we have not been able to establish the fate of the skin.

The second photograph appears next to the first in Anon. (1991) and Arndt (1991). It is a head and shoulders shot by S. Patzwahl which also shows the bill colour, facial patch and small grey periorbital ring. However, as this is one of Kawall's captive birds (T. Arndt verbally 1995) it cannot be considered as independent evidence with which to verify the original description.

The third photograph is in Low (1992) and was taken by the author herself in poor light conditions during a visit to N. Kawall (R. Low verbally 1995). On the opposite page is a *farinosa*, taken in much fuller light, whose single most striking difference lies in its large, creamy white periorbital ring. The shot of *kawalli* depicts an inconspicuous mid-grey periorbital ring and a bare, off-white facial patch, and indeed a series of photographs of several different birds taken by AJP in July 1991 and May 1993 at N. Kawall's aviaries clearly shows these features. However, the periorbital ring consistently appears to be *pale* grey; Grantsau & Camargo (1989) may be mistaken in calling it dark grey. These various photographs also reveal some consistent pattern of slaty grey and creamy yellow on the bill; the feet pale grey; and a very indistinct blackish tinge to the feathers running from the front of the periorbital ring to the cere (this feature is barely present in the two European specimens and appears to be formed by rudimentary rictal bristles).

The validity of the species

We find that the formal plumage description of the holotype in Grantsau & Camargo (1989) conforms very largely with our own composite description above, and with evidence we adduce from other sources. More importantly, of the eight characters which Grantsau & Camargo (1989) use to distinguish *kawalli* from *farinosa*, we find four to be borne out in the material we examined (see Table 1). These are the existence of bare skin at the base of the bill, the generally (if only slightly) purer green coloration (only the mantle has some of the floury tone that characterises most of the upperparts of *farinosa*), the colour and pattern of the outer tail feathers, and the reduced width of the terminal tail-band. We find that a fifth, the colour of the leading edge of the wing, is borne out at least in the populations where *farinosa* and *kawalli* are sympatric (all South American *farinosa* have red edges). We could not conclusively judge two others, the colour of the bill and the colour of the periorbital ring, which are perhaps best assessed in living birds (although D. C. Oren was able to confirm these features in the MPEG specimen). The curious creamy white plating on the upper mandible below the cere, and the creamy white of the lower mandible (visible in the specimens and in photographs), certainly suggest a possibly distinctive character; and on photographic evidence the periorbital colour is clearly pale grey. We find no strong evidence of a significant size difference (mean bill and wing lengths are virtually identical in *farinosa* and *kawalli*), but instead consider that the relative shortness of the tail in *kawalli* (no overlap with *farinosa*) can give this impression and should be used as a diagnostic feature (see Table 2). Of the three additional features that we compared—leg colour, head colour and a number of rectrices—we find no ground for confident discrimination.

It is, however, just worth noting that several specimens of *farinosa* showed traces of red and/or blue in the outer tail feathers. Both outermost rectrices on one (89.1.30.316) of the five *guatemalae* examined have blue outer vanes and a spot of red on the greenish-yellow of the inner vane near its centre (this also being noted by Salvadori 1891). Three of five nominate *farinosa* examined have some slight but distinct blue edging on the outer vane of the outermost feather (again as noted by both Salvadori 1891 and Forshaw 1989), and one of these (1922.3.5.1235) has a second outermost feather with the proximal half indigo and the fringes of the distal half tinged pink. Three *virenticeps* have a small red patch on the yellow half of the outermost rectrices, one (1949.58.133) with blackish-blue or brownish patches in the centres of several other feathers. Nevertheless, none of these specimens approaches the vivid tail pattern shown by the two *kawalli*, and none shows the other key features (facial patch, reduced tail-band).

Altogether, therefore, we believe that the case for accepting *Amazona kawalli* as a good species, on all the evidence above, is overwhelming. We conclude that six of the eight characters claimed to distinguish *kawalli* from *farinosa* (facial patch, periorbital colour, general coloration, wing edge colour, tail coloration, tail band width) are certainly valid, while one (overall size) is more properly related to diagnosably different tail length, and the last (bill colour) requires conclusive demonstration. On this basis the idea that *kawalli* is an aberrant form of *farinosa* cannot be sustained.

The idea that *kawalli* might only be a race of *farinosa* is also unsustainable, as the two birds are too closely sympatric. If we assume that the bird seen by Ribeiro (1920)—in a reference traced by Stresemann (1924)—was indeed *kawalli*, we now have four localities from which the form is known: Ribeiro's Foz do Castanho (now Foz Roosevelt on the Rio Roosevelt at its confluence with the Aripuanã, southern Pará, at around 7°35′S, 60°20′W: Paynter & Traylor 1991, P. E. Vanzolini verbally 1995), Mato-Piri on the Juruá (apparently at 6°30′S, 69°30′W, if indeed it is or was around "ten leagues"—i.e. *c.* 50–60 km—below Eirunepé: Paynter & Traylor 1991), Itaituba (4°17′S, 55°59′W) and Santarém (2°26′S, 54°41′W). According to D. F. Stotz (*in litt.* 1995), the Field Museum of Natural History (FMNH), Chicago, possesses material of *farinosa* from Tapaiuna (also written Itapaiuna), which is both closer to Santarém than Fordlândia (mentioned by Grantsau & Camargo 1989) and also on the right bank of the Tapajós (Vanzolini 1992), and from Urucurituba, which is "not far" from

Itaituba (Vanzolini 1992). *Amazona farinosa* has been found in the Tapajós National Park, close to Itaituba (Oren & Parker in prep.). Moreover, Gyldenstolpe (1945, 1951) referred to a specimen of *farinosa* from Caxiricatuba on the lower Tapajós, very close to Santarém. Grantsau & Camargo (1989) themselves mention specimens of *farinosa* from Eirunepé, only 60 km from the type-locality of *kawalli*, and Gyldenstolpe (1945, 1951) also had a specimen from there (under its former name of João Pessoa). All this evidence points to the geographical overlap between *kawalli* and *farinosa* being complete.

Finally, any suspicion that *kawalli* could somehow represent a lowland form of *Amazona mercenaria* can be dispelled by reference to Tables 1 and 2. Although the latter possesses a similar tail pattern and overall body plumage, it is altogether a smaller bird with a notably smaller, all-dark bill, a fully feathered face, and red in the edge of the wing.

The validity of the name

Despite finding that Ribeiro (1920) had mentioned once seeing a red-tailed *farinosa* in the field, and despite noting the absence of red on the edge of the wing and the relative shortness of the tail and consequently smaller breadth of the terminal band, Stresemann (1924) decided against identifying the Berlin Zoo specimen as a new race of *farinosa*, referring to it instead as a "curious mutation" ("merkwürdige Mutation"); but to call it to wider attention he gave it the name *Amazona farinosa* aberratio *rubricauda*. Unfortunately, no wider attention was caught, and in reviewing the articles of the *International Code of Zoological Nomenclature* we conclude that it consequently has no claim to validity. Thus Article 45f (iv) confirms that the name *rubricauda* is infrasubspecific; and although Article 10c indicates that such a name becomes available when used for a species or subspecies, Article 23j states that it remains unavailable until it is actually *used* as a specific or subspecific name, at which point it takes the date and author of the publication which so uses it. If, therefore, another name is meanwhile applied to the taxon with appropriate supporting evidence, as *kawalli* has been, then any pre-existing infrasubspecific name, used specifically or subspecifically for that taxon *after* the use of the other name, must become a junior synonym. Thus we judge that *kawalli* must stand, even if *rubricauda* is now used elsewhere. This view appears to be reinforced by Article 45g, which indicates that a clearly intended infrasubspecific name—one qualified as a "variety" or "form", but on the evidence of Article 45f (ii) also including "aberration"—remains unavailable if before 1985 it was never adopted as a specific or subspecific name or treated as a senior homonym.

There then remains the question of the most appropriate English name for the species. The name Kawall's Amazon has already been used (e.g. Anon. 1991, Arndt 1991, Low 1992) and it may be sensible to retain it. However, there has in recent years been a strong trend away from the adoption of personal possessive names for species, which can sometimes hinder the ability to motivate local people for their conservation. An English name that reflects a key locality or habitat, or else indicates a diagnostic feature, is often to be preferred. The apparent confinement of *A. kawalli* to the Amazon Basin does not help ("Amazon Amazon"); its habitat remains to be established but may not be distinctive; and any distinguishing features need to be reasonably obvious in the field. Among the options based on the latter, "Red-tailed" is already taken, while "Short-tailed" would run the risk of confusion with the Short-tailed Parrot *Graydidascalus brachyurus* (many bird lists use "parrot" rather than "amazon" for the genus *Amazona*), but "White-faced" may be worth consideration. We propose waiting for comments on diagnostic field characters when the species is next encountered in the wild.

Conservation

Amazona kawalli is clearly a very difficult species to detect, being extremely close to *A. farinosa* and coming from what is still a very poorly known region of South America. It may well be a rarer bird than *farinosa*, which itself does not appear to be very common in the Amazon Basin. There may, however, prove to be some habitat specialisation that separates the two.

Nevertheless, *kawalli* is now known from three and probably four localities within the Amazon Basin, spanning 1700 km. It seems improbable that the records in question represent the only populations of the species; others can be expected in due course, perhaps not only between the two outermost sites but also beyond them. Careful examination of skins of *farinosa* and *mercenaria* in museums may also throw up such records. On the other hand, we cannot automatically assume that *kawalli* is secure simply because it occupies a longitudinally extensive range. The disappearance of the Wattled Curassow *Crax globulosa* from along the Amazon and its tributaries, caused by hunting and habitat loss (Collar *et al.* 1992), is a warning against complacency over the security of Amazonian birds, especially those that are (or may be) confined to the immediate environs of big rivers. We believe the most appropriate of the new IUCN categories for *Amazona kawalli* is "Data Deficient", which means that there is at present inadequate information to make a direct or indirect assessment of its risk of extinction, and which therefore draws the attention of researchers to the importance of obtaining fuller data in order to include or discount it as a threatened species.

Acknowledgements

We are greatly indebted to Prof. B. Stephan of the Zoological Museum in Berlin for most courteously agreeing to send Stresemann's specimen for our inspection, to Michael Walters and Effie Warr of The Natural History Museum for extensive help in various relevant matters, and to David Oren of the Museu Paraense Emílio Goeldi, Belém, Brazil, for supplying information on the specimen of *kawalli* held there. Robert Prŷs-Jones and Michael Walters kindly commented on a late draft. Joe Cuddy set this study in motion by his discovery of the Stresemann specimen. Thomas Arndt, Thomas Brosset, Rosemary Low, José Maria Cardoso da Silva and Doug Stotz also greatly helped us in various ways.

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A dark-morph Sharp-shinned Hawk in California, with comments on dichromatism in raptors

by Michael A. Patten & John C. Wilson

Received 9 December 1995

On 12 November 1994 at 10.30 hrs, Wilson studied and photographed an unusual dark raptor in Hart Park, Bakersfield, Kern County, California. The bird was an obvious *Accipiter* in general shape, but it was mottled chocolate brown on the underparts. An examination of photographs (Fig. 1) and of the written description suggested that it was a dark-morph Sharp-shinned Hawk *Accipiter striatus*. Wilson's notes were as follows:

> An odd *Accipiter* perched in a horizontal branch of a bare cottonwood (*Populus* sp.) bordering the north side of the Kern River. The sky was clear, except for slight haze; there was no wind. Initial distance to the bird was about 100 m, but it was eventually approached to within 40 m. Viewed through 8 × 42 Bausch and Lomb Elite binoculars and photographed with a Nikon N8008 camera with a Nikon 300 mm lens and 2 × teleconverter. The bird was observed in excellent light for 20 min.
>
> Size was difficult to judge, but the round-headed appearance, relatively squared tail, and thin tarsi suggested Sharp-shinned Hawk. The overall color of underparts was dark chocolate brown. The breast and belly were somewhat mottled with a darker brownish. The thighs, cap, nape, and wings were a darker brown. The underside of the tail appeared to be somewhat striated with a wide dark brown tip and at least two visible cream-colored bands about half the width of the terminal band, with each bordered by a thin dark brown band. The iris was yellow, similar in color to that of an immature Sharp-shinned Hawk. There were short golden-yellow supercilia extending

Figure 1. Dark-morph Sharp-shinned Hawk *Accipiter striatus* at Hart Park in Bakersfield, California, U.S.A., 12 November 1994. Photograph by John C. Wilson.

> from just in front of the eyes to an equal distance behind the eyes. The supercilia were bordered inferiorly by a thin dark brown line. The cere was pale yellow. The legs and feet were bright yellow.
>
> During its stay on the perch this bird was studied by David G. Yee as well, including views through a Kowa telescope at 30 × for 10 min. The bird eventually dropped to the ground, at which point a few pale (perhaps even whitish) feathers were noted on the back. The bird remained on the ground for 20 min, such that observation time totaled nearly one hour.

Dark morphs are known in some South American populations of Sharp-shinned Hawk, such as *A. s. ventralis* (Blake 1977, Hilty & Brown 1986, Palmer 1988; del Hoyo *et al.* 1994 consider *ventralis* to be specifically distinct). However, dark morphs are not known in *A. s. velox*, the widespread North American subspecies, nor in *A. s. perobscurus*, the subspecies found on the Queen Charlotte Islands (Clark & Wheeler 1987). Whereas *perobscurus* has decidedly darker underparts than *velox* (Friedmann 1950), both of these subspecies show an underpart pattern very different from that shown by the Bakersfield bird: rather than being essentially uniform brown below, immatures of these subspecies show varying degrees of heavy brown streaking and/or mottling on whitish underparts. The description and photographs argue against this bird being *ventralis* (i.e. it is not clear, rufous-brown below) or being a darker individual of *perobscurus* (i.e. it is well outside the known range of variation for that subspecies). A positive racial determination cannot be made without a specimen; nevertheless, we believe it most parsimonious to conclude that the Bakersfield Sharp-shinned Hawk represents the first documented dark-morph *A. s. velox*, rather than either a dark *A. s. ventralis* thousands of miles from its home or California's first record of *A. s. perobscurus*.

Dichromatism (and polychromatism) is prevalent in numerous taxa, including birds (Huxley 1955, Paulson 1973). Presumably, dark-morph individuals arise in a population via melanistic mutations. If a selective advantage is conferred on these individuals, through crypticity or frequency-dependent selection for example, then assuming all other things are equal, the prominence of dark-morph individuals should increase in a population. If a particular morph has an advantage that morph would become the most abundant in a population at the exclusion or near-exclusion of the disadvantaged morph, as in the classic example of peppered moths (*Biston betularia*) in Britain (see Ridley 1993).

The frequency and persistence of dichromatism in groups such as raptors is therefore puzzling. Whereas dichromatism is prevalent in *Buteo*, for example, it is absent or scarce in other genera. Some genera show dichromatism only in certain species or subspecies, as is the case with *Accipiter*, a genus in which only eight of the 45–50 species show dichromatism (del Hoyo *et al.* 1994). Another example is provided by the harriers *Circus* spp.: some populations of *Circus* are highly dichromatic, but there is only one record of a dark-morph Northern Harrier *Circus cyaneus* for North America (Howell *et al.* 1992). Light-morph individuals prevail in most species and subspecies of raptors (including *Accipiter*), but in some instances a subspecies or population comes to be dominated by dark-morph individuals, as is the case with "Harlan's" Hawk *Buteo jamaicensis harlani* (Mindell 1983).

One mechanism whereby polymorphism is maintained in a population is via apostatic selection (Clarke 1962, Endler 1991). Unlike in the peppered moth example, where a selective advantage is conferred on individuals with cryptic coloration, apostatic selection is "frequency dependent selection in which a predator selects the most abundant morph in a polymorphic population resulting in a balanced polymorphism" (Lincoln *et al.* 1982). Thus, a "given phenotype is favored in direct proportion to its rarity through frequency-dependent predator pressure" (Paulson 1973). Apostatic selection, therefore, is selection exerted by predators against the more *common* morph of a given prey species.

The definition of apostatic selection was broadened by Payne (1967) to be "selection of individuals which contrast in appearance [with each other] within a population". He further suggested that apostatic selection could be effected *on* predators *by* prey, thus altering the predator-driven definition originally proposed. Paulson (1973) extended Payne's redefinition by presenting the "avoidance-image hypothesis", which predicts that balanced polymorphism will prevail if prey exert selection pressure via avoidance of familiar predator forms. Both Payne and Paulson treated avoidance-image as apostatic selection, but because the avoidance-image hypothesis predicts predator selection by prey, it is in this respect antithetical to the classic definition of apostatic selection. Thus, the term "counterapostatic selection" may be more appropriate for the avoidance-image hypothesis.

In any event, the avoidance-image hypothesis requires avoidance-learning of familiar colours by prey and frequency-dependent selection, both of which have been demonstrated in wild populations (e.g. Hori 1993, Craig 1994); thus, the hypothesis seems plausible. A rare predator morph would have higher fitness by virtue of its rarity so that, all other things being equal, this rare phenotype would increase to commonness in a population (assuming phenotypic expression is heritable, as it is in raptor dichromatism; Paulson 1973). However, such increases have not been documented in a natural population of raptors, as light-morph individuals predominate in most wild populations. Dark-morph individuals seem to be maintained in a population through balanced polymorphism, but they seldom increase to commonness. Nevertheless, there exists empirical evidence that appears to support the avoidance-image hypothesis, suggesting that counterapostatic selection is a valid mechanism for the maintenance of dichromatism in raptors and other predatory birds (Paulson 1973, Arnason 1978, Furness & Furness 1980; *cf.* Rohwer 1983).

However, if one assumes a selective advantage for dichromatic predators, counterapostatic selection seems not to provide an answer for the general lack of dark-morph *Accipiters*. Indeed, because *Accipiters* tend to inhabit forested areas, dark coloration would logically seem to provide a selective advantage by reducing plumage contrast. However, species in this genus feed primarily by surprise attack on ground-feeding mammals and birds (Bielefeldt *et al.* 1992). Because of this foraging behaviour, we believe that counterapostatic selection would exert little influence on dichromatism within this genus. Instead, we suggest that dichromatism is rare in *Accipiters* because the contrasting plumage of light-morph individuals assists them in prey capture. For certain predators, conspicuous coloration may enhance prey capture by stirring up a flock or causing movement in alarmed prey species (Wilson *et al.* 1988). It would be an advantage to have more contrasting plumage because prey species would flee or flush more readily from a conspicuous predator, providing a more readily visible target. Thus, given the hunting behaviour of *Accipiters*, it is advantageous to be conspicuous, and dichromatism in *Accipiters* is likely to remain rare.

Alternatively, the lack of dichromatism in *Accipiter* may be a result of high capture efficiency, a hypothesis suggested by Rohwer (1983) to explain the lack of dichromatism in the Peregrine Falcon *Falco peregrinus*. This hypothesis states that predators that are extremely efficient are not selected to be polychromatic because they do not benefit from the potential advantage afforded by polychromatism. Not only is this hypothesis invalid for *Accipiter* because its foraging behaviour likely does not favour such selection, it need not be invoked for Peregrine Falcon either, as this is a species that feeds mainly by aerial diving, and pale underparts may be an advantage by enhancing camouflage (Cowan 1972, Götmark 1987). Thus, we would not expect counterapostatic selection to affect this species. Conversely, *Buteos* hunt mainly by soaring, and are thus readily visible, providing a perfect scenario for counterapostatic selection to be effective.

Acknowledgements

We thank Richard A. Erickson and Matthew T. Heindel for examining the photographs and for valuable discussion, and William S. Clark, Richard A. Erickson, Gita R. Kolluru, and Robert N. Rosenfield for comments on a draft of this note.

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IN BRIEF

THE CORRECT CITATION OF THE BLUE-CHINNED SAPPHIRE *CHLORESTES NOTATUS*

The name of this bird was accredited in Peters (1945) to "C. Reichenbach 1795", and this appears to have been followed, e.g. by Meyer de Schauensee (1966). However, C. Reichenbach did not exist. Until 1908, this species was generally cited as *Chlorestes caeruleus* (Vieillot), i.e. *Trochilus caeruleus* Vieillot 1817 (vol. 7, p. 361), though in fact the earliest use of this name appears to be Audebert & Vieillot 1802 (vol. 1, p. 40). Berlepsch (1908, p. 266 footnote), apparently on the basis of a letter from C. W. Richmond to Ernst Hartert, pointed out that this name was predated by *notatus*. The first reference in literature to the species appears to be "No. 48 *Trochilus* . . ." Richard & Bernard (1792, p. 117). On this was based *Trochilus notatus* G.C. Reich (1793). Berlepsch used this, the earliest name, but quoted the date as 1795. This date was repeated by Peters (1945) who also made the error of transliterating Reich as Reichenbach. I have examined a microfilm copy of Reich's rare paper, and confirm the name and that the date there quoted is 1793. There is no reason to suppose that this date is incorrect, and if Berlepsch had reason to believe that the date of publication was actually later than the date cited, he would probably have commented. It seems likely, therefore, that the date 1795 is a misprint. The correct citation of *Chlorestes notatus* should therefore be: G. C. Reich, 1793, Magazin des Thierreichs (Erlangen) 1, Abth. 3, p. 129. Based on Richard & Bernard 1792, Cat. Ois. env. de Cayenne à la Soc. par M. le Blond, in *Actes Soc. Hist. Nat. Paris*, i, 1: 117.

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MICHAEL WALTERS

6 December 1995

THE EGGS OF *CARPOCOCCYX RENAULDI*: A CORRECTION

Some years ago (Walters 1973, *Bull. Brit. Orn. Cl.* 93: 174), I described a clutch of four eggs which had been presented to The Natural History Museum by the late L. W. Hill (not Hall, as there misprinted) of "Birdland", Bourton-on-the-Water, as having been laid by Renauld's, or the Coral-billed Ground-cuckoo *Carpococcyx renauldi*. It now seems clear that these eggs were in fact misidentified, as their size relative to body size is quite out of proportion to those of other related species.

At that time, I queried the identity of an egg reported in Meise (1964, Schönwetter's *Handbuch der Oologie*, pt. 10), but it would seem that this is in fact likely to be correct. This egg could not be found in 1973, but what appears to be the same specimen has subsequently come to light in the NHM collection. It was laid on 3 July 1927 in the aviary of Alfred Ezra, and given to Walter Rothschild. Schönwetter's measurements, as quoted by Meise (1964), were 44.4 × 34.0 mm. I subsequently measured it and found it to be 44.5 × 34.2 mm. This is close enough to demonstrate that it may well be the same egg. Furthermore, curation of the NHM collection has revealed another egg, this time an oviduct specimen, collected by Sir Walter Williamson on 12 June 1918 at Pak Jung, E. Thailand, which measures 42.7 × 38.1. Although Williamson had queried the identity of the species for unclear reasons, it seems likely to be correct.

The size of *c*. 42–44 × 34–38 mm for the eggs of this species seems, therefore, more likely to be correct than the figures (60–63 × 43–45 mm) previously given.

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ON THE DIAGNOSIS OF *ARAMIDES CAJANEA AVICENNIAE* STOTZ, 1992

Described from the mangroves of coastal Brazil in southern São Paulo State, *Aramides cajanea avicenniae* Stotz, 1992 was characterized as having "the back Plumbeous . . . and occiput with brown wash much reduced and greyer or absent" (Stotz 1992, *Bull. Brit. Orn. Cl.* 112: 231–234). Examining 73 specimens of the nominate form in the Museu Nacional (MN), Rio de Janeiro, and in the Museu de História Natural "Capão da Imbuia" (MHNCI), Curitiba–Paraná, from different parts of Brazil, we found that the coloration of the head of *A. c. cajanea* varied from a strong brown distributed over the entire upper head to a gradually restricted and duller brown which is limited to the neck, culminating in a few specimens with a pure grey pattern similar to that of the type of *A. c. avicenniae* (deposited in the Museu de Zoologia of the University of São Paulo, MZUSP 67212).

Three of the analysed specimens of *A. c. cajanea* do not show any trace of brown on the head (Pará, MN 25131; "Distrito Federal" [=Rio de Janeiro], MN 28571; Espírito Santo, MN 25133, MN 26662). Possibly one specimen from Mato Grosso do Sul (MN 20113) can also be added to this list, as it is apparently a juvenile in the process of substitution of the brown feathers of the head for grey ones. For this reason we suggest that the diagnosis of *A. c. avicenniae* should be restricted to the coloration of the back.

A female (MHNCI 187) confirms the presence of *A. c. avicenniae* in the state of Paraná (Caiobá–Passagem, 25°52′S, 48°36′W, municipality of Guaratuba). An unexamined specimen from Rio de Borrachudo that Stotz (*loc. cit.*) thought belonged to *A. c. avicenniae* was the only previous indication of its occurrence in Paraná.

We thank Mr Heraldo Britski, who authorized our access to the ornithological collection of the MZUSP, and Júlio de Moura Leite (MHNCI) and Emygdio L.A. Monteiro Filho (Universidade Federal do Paraná) for their critical remarks and suggestions concerning this text. The Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) is thanked for the financial help formerly offered to our researches. We also would like to acknowledge the help of Jorge B. Nacinovic (MN) and Douglas F. Stotz in the revision of this manuscript.

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4 July 1995

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Printed on acid-free paper.

Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

Dr D. W. SNOW

Volume 116
1996

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BRITISH ORNITHOLOGISTS' CLUB
FOUNDED 5 OCTOBER 1892
Registered Charity No. 279583

TITLE and OBJECTS

The objects of the Club, which shall be called the "British Ornithologists' Club", are the promotion of scientific discussion between Members of the British Ornithologists' Union and others interested in ornithology, and to facilitate the publication of scientific information connected with ornithology.

RULES

(*Incorporating the amendments approved by the Annual General Meeting on 21 May 1996*)

(1) (a) Any Member of the British Ornithologists' Union may become a Member of the Club on payment to the Honorary Treasurer of the annual subscription.

(b) A Member who ceases to be a Member of the British of the British Ornithologists' Union shall also cease to be a Member of the Club, unless the Committee shall decide it is in the interests of the Club to permit him to remain a Member.

(2) A Member who has an unbroken membership of the Club for fifty years shall become a Life Member and shall not be required to pay any further annual subscriptions.

(3) If the conduct of any Member shall be deemed by not less than five Members of the Committee present at a meeting of the Committee to be prejudicial to the interests of the Club, that Member shall (a) be so informed by a letter from the Honorary Secretary and (b) be given an opportunity of appearing in person before the Committee to explain his conduct. The Committee shall have the power to terminate his membership forthwith (i) if not less than five Members of the Committee present when he appears before it are not satisfied with his explanation, or (ii) if he does not appear before the Committee in person, but gives an explanation which not less than five Members of the Committee deem to be unsatisfactory, or (iii) if no explanation has been received from him within twenty-eight days of the despatch of the Honorary Secretary's letter to him.

MANAGEMENT

(4) (a) There shall be a **Management Committee**, elected from among the Members, which shall have general control and management of the administration of the Club. This Committee shall consist of a Chairman and a Vice-Chairman, each elected for terms of four years; an Honorary Secretary and an Honorary Treasurer each elected for a term of one year; and five other Members of the Committee, each of whom shall be elected for terms of four years. With the exception of the Honorary Secretary and Honorary Treasurer, the Officers and other Members of the Committee shall be ineligible for re-election within one year to the same office or position. For the purpose of this Rule, the period of office of a year shall be reckoned from one Annual General Meeting until the next or, in the case of an Officer or other Member of the Committee elected at a Special General Meeting, from that Special General Meeting until the next Annual General Meeting. The term for which an Officer or other Member of the Committee is elected shall expire at the close of the Annual General Meeting, unless it is adjourned, in which case it shall expire at the first adjournment after the election of a successor. Except as otherwise provided by these Rules, a quorum of the Committee shall be three Members.

Note. The Members of the Management Committee are legally the Trustees of the Club.

(b) **Sub-committees and other Officers.** At the discretion of the Committee:

(i) additional officers may be appointed,

(ii) sub-committees may be formed,

as and when necessary, to act in an advisory capacity for the management of the Club's activities. The Chairman and/or Members of such sub-committees may attend meetings of the Committee, by invitation, as *ex-officio* Members, but without the right to vote on any issue.

(5) The names of Officers and other Members of the Committee nominated by the Committee shall be circulated at least three weeks before the relevant Annual or Special General Meeting. Any Member wishing to nominate a candidate shall forward to the Honorary Secretary his nomination in writing signed by himself and another Member, with confirmation that the candidate has agreed to be nominated. Such nomination shall reach the Honorary Secretary not less than 14 days before such a General Meeting. Elections shall be by a simple majority of those present and voting at a General Meeting.

(6) A Member wishing to complain of the manner in which affairs of the Club are conducted must communicate his complaint in writing to the Chairman, who will raise the complaint as soon as practicable at a meeting of the Committee for a decision or, if he considers the matter of urgency, will call a meeting of the Committee specially to consider it.

SUBSCRIPTION

(7) The rate of annual subscription shall be fixed by the Committee from time to time. The subscription shall be due for payment on the first day of January in every year. The Committee shall be entitled to terminate the membership of any Member whose subscription has not been paid within six months of falling due, provided that such Member has been given written notice by the Honorary Treasurer calling upon him to pay the subscription, and has not complied with that notice within one month of its date.

(8) When any Member, who is not an Officer or other Member of the Committee, has rendered or is rendering the Club any service, the Committee may, if it deems it appropriate, waive the subscription due from that Member for any year, or years.
(9) Members joining the Club in October, November or December may elect for their first annual subscription to run until the end of the next calendar year.

MEETINGS

(10) The Club shall meet not less than four times a year at times and places to be arranged by the Committee, in furtherance of the Objects of the Club.
(11) Members may introduce guests at any ordinary meeting of the Club, and Members of the British Ornithologists' Union who are not Members of the Club may, without any such introduction be permitted at the discretion of the Honorary Secretary to attend any one ordinary meeting during any calendar year, except that no former Member, who has had his membership terminated for any cause and who has not been reinstated, shall be allowed to attend a meeting without the permission of the Chairman or, in his absence, the Vice-Chairman.
(12) The Annual General Meeting of the Club shall be held in April or May every year on a date to be fixed by the Committee. At this Meeting the business to be transacted shall be to receive and consider the Report of the Committee and the Accounts of the preceding calendar year, the regulation of matters having reference to the *Bulletin*, the election of Officers and other Members of the Committee, and any other business of which notice in writing shall have been given to the Honorary Secretary prior to 28 February in the same year. Notice of three weeks shall be given by the Committee of every Annual General Meeting.
(13) A Special General Meeting may be called by the Committee for any purpose which it deems to be of sufficient importance or at the instance of a requisition signed by at least 15 Members, stating the purpose for which the Meeting is being requisitioned, and sent to the Honorary Secretary. Notice of at least three weeks shall be given of a Special General Meeting and the notice convening it shall state the purpose of the Meeting; no other business may be transacted at the Meeting.

'BULLETIN' OF THE CLUB

(14) (a) A journal under the title of the "Bulletin of the British Ornithologists' Club" shall be published not less than four times per year and one copy shall be distributed *gratis* to every member who has paid the current annual subscription, subject to Rule 14 (b).

(b) Member shall receive copies of issues of the Bulletin published in the year in which they join the Club, provided they do not join in October, November or December and elect for their first subscription to run until the end of the next calendar year, in which case they shall receive copies of all issues published after their date of joining.

(c) There shall be an Editor of the *Bulletin*, appointed by the Committee for a term of four years. The Editor may receive an annual honorarium for such work, which shall be determined by the Committee from time to time. The Editor may attend any meeting of the Committee, as an *ex-officio* Member, (in accordance with Rule 4 (b) above) for the purposes of offering advice on all editorial matters, but executive authority rests with the Committee, as Trustees of the Club.
(15) No communication, the whole or any important part of which has already been published elsewhere, shall be eligible for publication in the *Bulletin*, except at the discretion of the Editor.

TRUST FUND

(16) Subject to the terms of any bequest or gift, any stocks, shares, other securities, money or other property (whether real or personal) from time to time belonging to the Club may be vested in Trustees for the Club, if the Club shall by a Special Resolution so decide. Such Special Resolution shall appoint Trustees, and shall specify the trusts under which the property is to be held.

AMENDMENT OF RULES

(17) These Rules or any of them may be revoked or amended, and any new Rule or provision may be substituted or added by a Special Resolution.

INTERPRETATION

(18) In these Rules a "Special Resolution" means a resolution passed by a majority of not less than three fourths of the Members voting thereon at an Annual or Special General Meeting of the Club, of which not less than two weeks' notice specifying the intention to propose the resolution as a Special Resolution has been given.
(19) In these Rules "Member" means a Member of the Club, unless the context otherwise requires.

This version incorporates the amendments approved at the 1996 AGM, on 21 May 1996, and published in December 1996 (see *Bulletin* 116 (4): 203). These amend the Rules approved by the Annual General Meeting on 10 May 1988, which were last published in full in 1991, with the Annual List of Members, the List of Authors and Contents, and Index to Scientific Names, of Vol 110 (pages xiii to xv).

LIST OF AUTHORS AND CONTENTS

INDEX TO SCIENTIFIC NAMES

(Compiled by Mary N. Muller)

All generic and specific names (of birds only) are indexed. New subspecific names are indexed in bold print under generic, specific and subspecific names.

CORRECTIONS TO TEXT

Page 20	Line 19	*bougainvillei* not *bougainville*
Page 30	Line 30	*Aulacorhynchus* not *Aulacorhyncus*
Page 34	Line 14	*Bolborhynchus* not *Bolborhyncus*
Page 47	Line 46	*nigrivestis* not *nigriventris*
Page 140	Line 22 & 24	*leucogastra* not *leucogaster*
Page 165	Line 17	*Eudynamys* not *Eudynamis*
Page 166	Line 18	*Picus* not *P.*
Page 168	Line 11	*borbonensis* not *borbonnensis*
Page 176	Line 32	*Nyctibius* not *Nyctibus*
Page 176	Line 34	*Ramphastos* not *Rhamphastos*
Page 236	Line 35	*acuticaudata* not *acuticauda*
Page 238	Line 31	*andecola* not *andaecola*
Page 238	Line 43	*olivaceus* not *olivaeceus*
Page 264	Acknowledgements.	Add Joe Forshaw and Jacques Vieillard to the list of those who "greatly helped us in various ways".

Printed in Great Britain by Henry Ling Ltd, at the Dorset Press, Dorchester, Dorset