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Continued inside back cover

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ECOLOGICAL AND BIOGEOGRAPHICAL ASPECTS OF FOREST BIRD COMMUNITIES IN MALAWI

Françoise Dowsett-Lemaire

SUMMARY

Malawi has an extremely varied relief, with many small patches of rain forest (totalling today only 320 km^2) scattered at over 40 major sites on hills, mountain scarps and plateaux (Table 1, Fig. 1). Evergreen forests embrace all types from lowland to montane, between 500 and 2450 m, but are most extensive above 1400 or 1500 m.

The breeding avifauna of the forest interior and canopy consists of 105 species of 66 genera; in addition there are 54 marginal species, i.e. non-breeding visitors or residents of the ecotone. From an intensive survey of all major forest localities, information is given on the feeding ecology, distribution, altitudinal range, local densities and movements (if any) of the breeding avifauna (Chapter 6). The 105 species comprise 38 Montane (near) endemics, 14 Eastern endemics and 53 Pluriregional elements (Chapter 5); 67 (64 per cent) are essentially or wholly forest elements in Africa. The most important families are the Pycnonotidae (11 species), Turdidae (13), Sylviidae (10) and Muscicapidae (9). Up to three congeneric species (in *Andropadus*, *Turdus*, *Apalis*, *Nectarinia*) or four (*Phyllastrephus*) coexist locally. The total size of some isolated populations is very small: thus the localized taxa *Stactolaema olivacea belcheri*, *Oriolus chlorocephalus*, *Turdus fischeri* and *Apalis chariessa* all number less than 100 pairs in their Malawi range. But densities of at least 33 common passerines range from 2–20 pairs/10 ha.

The country has a single rainy season, in the summer months; 86 per cent of 1408 breeding records for 64 species fall in the period September to December, i.e. in the late, hot dry season and at the beginning of the rains (Chapter 7). There is evidence for more than one normal brood per year in only three species.

Most of the montane forest birds occurring in Malawi are widely distributed in the mountains of Africa (Chapter 8). Thirty-five of the 38 species (92 per cent) are shared with mountains to the north, and only 18 (47 per cent) with mountains to the south; thus the forests of Malawi (including the southeast) clearly belong to the Tanzania–Malawi regional mountain system of Moreau (1966). As many as 20 species reach their southern, southeastern or southwestern limits of range within the latitudes of Malawi and adjacent N Mozambique. Non-montane species are much less affected by this trend of latitudinal impoverishment.

The forests of south-central Malawi (west of the Rift) are very small and species-poor (56 species), whereas those of the north and southeast are equally rich (over 80 species, 63 in common). The fact that the southeastern forests have a reduced montane component (24 species vs 34 in the north, cf. above) is compensated for by a greater number of lowland elements, especially Eastern endemics (Chapter 9.1). These trends seem related to the better structural development and more diverse flora of the habitat at low and medium altitudes in the southeast, and at submontane levels in the north (Chapter 9.2). Bird species diversity in each of the two main regions of Malawi parallels variations in floristic diversity over the altitudinal gradient, and reaches a peak of 68 species at

1600–2050 m in the north, and 66 at 1200–1400 m in the south (though slightly lower in the cool gorges of Mulanje Mt). The proportion of montane elements varies from 0–10 per cent in lowland forest (500–1100 m) to 21–31 per cent in mid-altitude forest (1000–1100 to 1500–1600 m) and 47–77 per cent in submontane and montane forests. No two species have exactly the same altitudinal range, and there are local variations according to size and exposure of mountains. Within particular forest types and regions (Chapter 9.3), forest area is the environmental factor most consistently correlated to bird species numbers. In the north, structural complexity (expressed by tree species numbers) and altitudinal range are also strongly correlated to bird species diversity, but inter-correlation between these factors and area calls for caution in the interpretation of regression relationships.

The thrush *Alethe choloensis* is the only species endemic to Malawi and adjacent N Mozambique (Chapter 10). Isolated populations of some other bird species have undergone racial differentiation, but not all isolates show phenotypic change.

Local gaps in the distribution of forest birds (Chapter 11) are to a large extent explained by ecological factors—i.e. the size or structure of certain forests is unsuitable. On the other hand, geographical or altitudinal replacements of congeneric species are frequent; interspecific competition in some genera (especially *Apalis* warblers) may lead to local absences. Isolation combined with historical changes in the extent of forest may explain others.

Very few stenotypic forest birds undertake migratory movements on a large scale; montane species include *Columba arquatrix*, *Schoutedenapus myoptilus* and the altitudinal migrant *Pogonocichla stellata* (Chapter 12). Movements to lower altitudes in the non-breeding season have been observed in over 20 species and are especially noticeable down the slopes of Mulanje Mt (the only massif in Malawi with a continuum of forest from montane to lowland levels). In the majority of species, this habit affects only a small proportion of the population and its ecological benefit may be negligible. In addition, erratic and inter-montane movements have been identified in 15 species, involving distances of 20–100 km. *Apaloderma vittatum* and *Malaconotus multicolor* in particular show remarkable exploratory behaviour; one *Apalis chariessa* even crossed the Rift Valley. Clearly some species could respond to local changes in climate and forest cover fairly promptly, but the potential mobility and colonizing ability of others seems very limited.

It is as yet very unclear to what extent forest cover in the African mountains was affected by the climatic changes of the late Quaternary (Chapter 13). But everywhere in Malawi there is ample evidence that upland forest has receded under the influence of bush-fires for many centuries. From biogeographical data, the most ancient forest sites are probably in the Mulanje–Thyolo area in the south, and on the Nyika and N Viphya Plateaux in the north. The Misuku Hills in the extreme north, although floristically the most diverse forests in the country, appear incompletely recolonized by forest birds.

CONTENTS

Chapter 1. INTRODUCTION

With a land area of 94 276 km^2 Malawi is a relatively small country by African standards. Situated more or less half-way along the chain of mountains that extends from Ethiopia to South Africa, it has a biogeographical position of considerable interest; the depression of Lake Malawi, 540 km long from north to south, and of the Shire River which drains the Lake into the Lower Zambezi, forms the southern end of the Great African Rift. From the valley floor of the Lower Shire (50–100 m alt.) to the high mountain peaks of Nyika (2607 m) in the north and Mulanje (3002 m) in the southeast, the varied land configuration has produced a great diversity of woodland and forest types.

With the exception of a narrow band along the shore of Lake Malawi, most of the land north of 14°30S lies at 1000–1100 m, above which isolated hills and several high plateaux rise to 1500–2600 m. South of the Lake, the peneplain lies lower (500–600 m) and highland areas are much less extensive but rather more prominent (Fig. 1). The main vegetation type at 500–1500 m is 'miombo' woodland (dominated by several species of the Caesalpiniaceae *Brachystegia* and *Julbernardia*), with local pockets of 'mopane' *Colophospermum mopane* woodland, *Acacia–Combretum* savanna and thickets. The valley of the Lower Shire was covered with dense thickets, deciduous *Sterculia* forest and

Continued on p. 6

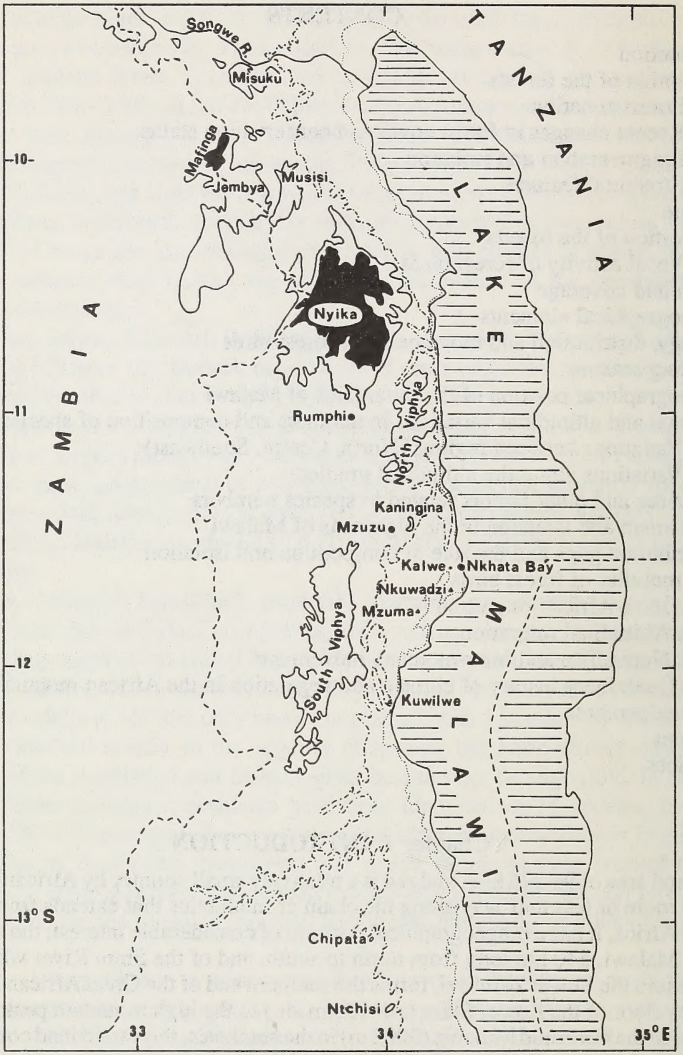

Fig. 1. *Map of Malawi north of 13°30S*

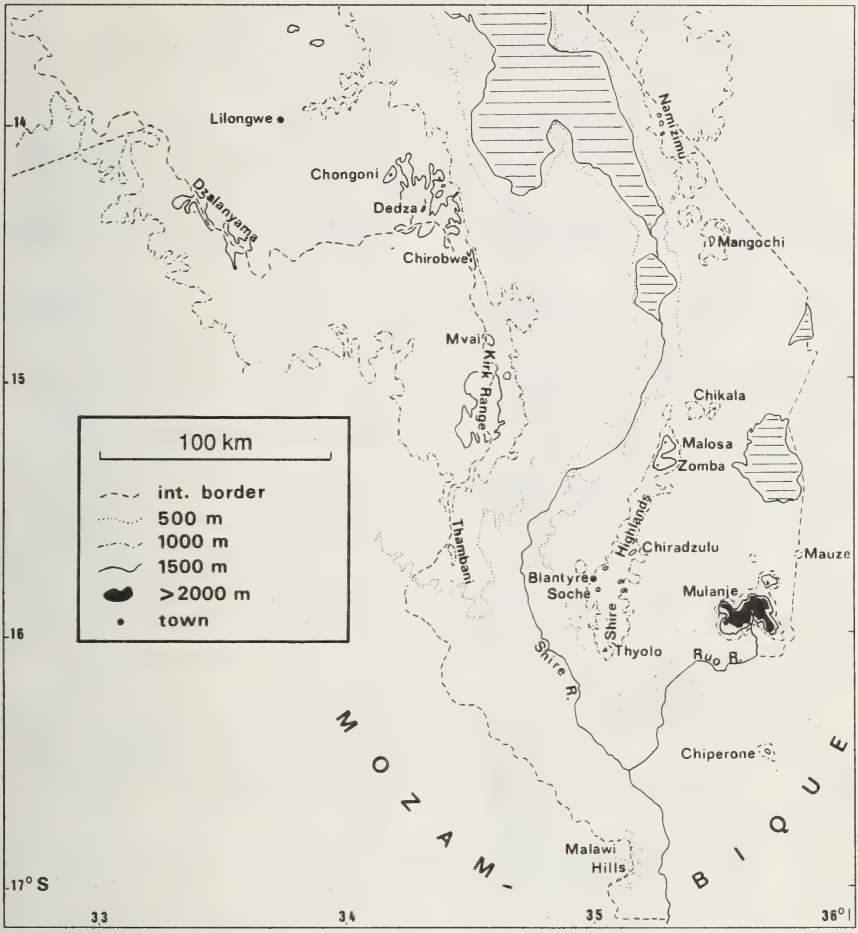

Fig. 1 *continued. Map of Malawi south of 13°30S*

Acacia savanna now largely cleared for cultivation, except in protected areas such as Lengwe National Park. Rain forests—i.e. excluding evergreen forest lining streams—are rather localized at altitudes of 500 to 1100 m. Between 1000/1200 and 1600 m, rain-exposed sides of large mountains and several small hills bear patches of transitional, mid-altitude rain forest, but the most extensive areas of evergreen forest are found above 1400 or 1500 m. The total area of forest today (excluding riparian vegetation) is near 320 km^2, with almost 70 per cent of this above 1600 m, and it is fragmented in over 40 major sites on hills and plateaux (Table 1). Most of the Mid-Tertiary surface is underlain by rocks of pre-Cambrian age (Chapman & White 1970); there are no centres of volcanic activity within Malawi, although that of Rungwe Mt in SW Tanzania is only 50 km north of the international border.

Relative to the small size and isolation of forest fragments, the avifauna is strikingly diverse. Bird collection in the country started in the late nineteenth century, but the forest avifauna remained poorly known until the 1930s and 1940s when C.W. Benson visited a large proportion of the forests (Dowsett 1981). His work culminated in the production of an annotated check-list (Benson & Benson 1977), which summarizes information on distribution and breeding of species from a great many scattered publications. This initial set of data proved invaluable in planning further studies in distribution, coupled with investigation into the ecological niche of individual species and the status of localized, potentially endangered forms. In a first phase of our research, the ecology and population dynamics of the breeding avifauna of the Nyika Plateau—the largest montane complex in the country—were studied for two-and-a-half years (Dowsett-Lemaire 1983a, 1983c, 1985a, Dowsett 1985, Dowsett & Dowsett-Lemaire 1984, 1986). Characteristic features of these montane forest birds appeared to be a marked breeding seasonality, high survival rates and site-fidelity, and low breeding productivity. Hence adaptation to habitat change seems likely to be slow.

The status and numbers of forest birds elsewhere in the country were then assessed over a period of 17 months, when all major forest localities were surveyed. Several important forest sites have become greatly threatened by increasing human activities; others were explored for the first time. It also appeared that Benson's accounts of the places he visited had often been selective or incomplete—e.g. he recorded only 18 species from the N. Viphya forests now known to have at least 52.

The present paper describes the distribution, ecology and local densities of 105 species of the forest interior and canopy, while 54 marginal species are more briefly mentioned. Over 1400 breeding records show the egg-laying season of 64 species. The biogeographical position of the Malawi mountains is placed in its African context, while regional variations in species numbers are analysed in relation to the altitudinal gradient, structure, size and floristic diversity of forest isolates. The possible role of interspecific competition and isolation in shaping the mosaic-like distribution of some forest birds is discussed. Special attention was paid to the timing and extent of migratory movements undertaken by a few montane species. As breeding status and distribution became accurately known, it was possible to identify erratic and inter-montane movements in 15 species. Evidence for the mobility of montane forest birds in Africa is reviewed. Finally, the controversial theories on the late Quaternary history of climate and vegetation in the mountains of eastern Africa are critically examined. Based on biogeographical data, some hypotheses are presented on the relative age of different forest areas in Malawi and on likely routes of recolonization of certain forest sites.

Bird nomenclature follows Dowsett & Forbes-Watson (in press) except for the

Continued on p. 8

Table 1. *Main features of the major localities of rain forest in Malawi*
Forest size was measured from aerial photographs, altitude with a calibrated altimeter

Locality	Altitude (m)	Forest type	Size (ha) of total area	(largest patch)
North of 14°S				
Misuku Hills:				
Mugesse	1600–1880	submontane	720	(720)
Matipa-Wilindi	1700–2050	submontane	2400	(1350)
Mafinga Mts	1600–1800	submontane	*c.* 250	(44)
Jembya Plateau	1850–1920	submontane	160	(133)
Musisi Hill	1600–1850	submontane	300	(114)
Nyika Plateau:				
southwest slopes[a]	1925–2225	submontane	550	(90)
central plateau[b]	2250–2450	montane	2000–3000	(8)
eastern scarp	1750–2350	submontane	3400	(1300)
elsewhere (S, SE)	2000–2200	submontane	72	(19)
North Viphya Plateau:				
Uzumara	1600–1920	submontane	540	(520)
Chimaliro	1850–2000	submontane	180	(106)
Choma	1750	submontane	7.5	(7.5)
Kaningina Hills	1000–1500	mid-altitude	*c.* 670	(130)
South Viphya Plateau:				
Nthungwa	1600–1800	submontane	108	(108)
Chamambo	1600–1800	submontane	263	(263)
Kawandama	1750–1850	submontane	75	(51)
central plateau[b]	1600–1850	submontane	2000–2500	(20)
eastern scarp[b]	1100–1500	mid-altitude	*c.* 2500	(>150)
Northern Lake-shore:				
Kalwe (Nkhata Bay)	500	lowland	80	(80)
Nkuwadzi	600	lowland	600	(600)
Mzuma	600–700	lowland	*c.* 600	(600)
Kuwilwe Hill	500–1200	lowland	*c.* 200	?
Chipata Mt	1400–1550	mid-altitude	44	(44)
Ntchisi Mt	1350–1450	mid-altitude	30	(253)
	1450–1640	submontane	223	
South of 14°S, west of Rift				
Dzalanyama Range[c]	1500–1600	mid-altitude	75	(33)
Chongoni Mt	1600–1950	submontane	177	(44)
Mlunduni Mt	1800–2000	submontane	5	(2.5)
Dedza Mt[d]	1800–2050	submontane	230	(114)
	2050–2150	montane		
Chirobwe Mt	1800–2000	submontane	614	(614)
Kirk Range:				
Mvai Mt	1700–1800	submontane	33	(13)
Dzonze Mt	1600–1800	submontane	66	(30)
Dzonze *Khaya* forest	1450	mid-altitude	12	(12)
Chimbia Hill	1750–1800	submontane	11	(5.5)
Nsambi graveyards	1250–1350	mid-altitude	21	(7)
Thambani Hill	1100–1200	lowland	78	(42)
Malawi Hills	600–940	lowland	*c.* 400	(400)

Table 1 contd.

Locality	Altitude (m)	Forest type	Size (ha) of total area	(largest patch)
South of 14°S, east of Rift				
Namizimu Hills	1500–1700	submontane	40	(32)
Mangochi Mt	1550–1700	submontane	230	(116)
Chikala Hill	1300–1600	mid-altitude	285	(285)
Shire Highlands:				
Malosa Mt	1700–1950	submontane	730	(196)
Zomba Mt	1600–1950	submontane	600	(150)
Chiradzulu Mt	1450–1750	submontane	150	(130)
Lisau Saddle (Chiradzulu)	1300–1450	mid-altitude	160	(160)
Ndirande Mt	1400–1600	mid-altitude	60	(60)
Soche Mt[e]	1300–1520	mid-altitude	150	(150)
Bangwe Hill[e]	1350–1550	mid-altitude	60	(60)
Malabvi Hill[e]	1200–1440	mid-altitude	*c.* 30	(30)
Thyolo Mt[e]	1170–1450	mid-altitude	1000	(1000)
Thyolo tea estates	1000–1100	lowland	600	(120)
Mulanje Mt:				
foothills[e]	600–950	lowland	*c.* 200	?
middle slopes[e]	900–1500	mid-altitude	1800	(800)
upper slopes and plateaux[d]	1500–1850	submontane	5000	(2000)
	1850–2300	montane		

[a] Including 210 ha on the Zambian side.
[b] Total sizes of forest patches were extrapolated from measurements on a limited number of aerial photographs.
[c] Excluding 245 ha on the Mozambique side (not visited).
[d] Limits between submontane and montane forests cannot be distinguished on photos, and total sizes are lumped.
[e] Sizes of untouched forest are below those indicated as damaged understorey is not seen on photos; figures are valid for 1982 but still decreasing.

Zoothera thrushes which I prefer to keep in the broad genus *Turdus*—for their similar features of ecology and behaviour, and *Turdus fischeri*, morphologically intermediate between *Turdus* and *Zoothera*, has typical *Turdus* feeding habits. Taxonomic changes adopted since the reference works of Benson *et al.* (1971), Hall & Moreau (1970) and Snow (1978) have largely been explained in Dowsett & Dowsett-Lemaire (1980), also Dowsett-Lemaire & Dowsett (1988a: *Tauraco* species). Justifications for the more recent splitting of *Andropadus nigriceps* from *A. tephrolaemus*, and for the geographical limit between *Batis mixta* and *B. capensis*, and some other comments are given in Appendix 1. English names appear once, in the species' accounts (Chapter 6).

A gazetteer of all forest and other localities not mentioned in Benson & Benson (1977) is also presented in Appendix 2.

Chapter 2. DESCRIPTION OF THE FORESTS

2.1. Forest zonation

From their floristic features, three main categories of rain forest can be recognized in Malawi: lowland (with 0–25 per cent montane elements), transitional or mid-altitude

(25–50 per cent montane elements) and Afromontane (over 50 per cent montane elements) (Dowsett-Lemaire 1988a, 1989b). Within the Afromontane category, montane forests replace submontane above certain altitudes; they are characterized by a marked impoverishment in their floristic composition and certain structural features, such as low canopy and abundance of non-vascular epiphytes. Montane forests *sensu stricto* occur only on the highest mountains, i.e. on the Nyika Plateau (above 2250 m), Dedza Mt (above 2050 m) and Mulanje Mt (above *c.* 1850 m).

2.2. Recent changes in forest cover and conservation status

Early this century large areas of lowland forest were cleared around Thyolo and Mulanje with the establishment of farming estates. Similarly most of the lowland forest of the northern Lake-shore (near Nkhata Bay) gave way to tea and rubber plantations. Elsewhere, as in the Misuku Hills (on the Tanzanian border), and central Malawi (e.g. between Dedza and the Kirk Range), human population was already dense before the turn of the century, and all that remains of mid-altitude forest is in the form of graveyard relicts. Afromontane forests have suffered least from direct destruction, but dry season bush-fires have taken their toll over many centuries. Some of the montane grassland and secondary growth on high plateaux such as the Nyika and South Viphya is clearly derived from forest (Dowsett-Lemaire 1985b: 363–6; also Chapter 2.4).

Most of the surviving evergreen forests were incorporated into reserves from the 1920s, and the Nyika forests are in a national park. Exceptions include the remnants of fine lowland forest scattered on the tea estates near Thyolo; some are well protected, but one of them, on Nanzadi Estate (now Nansadi), was totally destroyed in the 1960s (Chapman & White 1970: 155, 160). The small forest on Mpingwe Hill near Blantyre is now reduced to a few trees and that on Machemba Hill north of Mulanje is being felled for fire-wood.

Overall, forest reserves have received adequate protection, though fires remain a problem in places (e.g. eastern foothills of the Nyika, Mulanje). Except very locally, especially the *Widdringtonia* forests on the Mulanje plateaux, they were not exploited for timber. In the last 25 years however, increasing human population in the south of the country has posed a serious threat to the survival of mid-altitude forest (Dowsett-Lemaire & Dowsett 1988b): over 15 km^2 have been lost to garden encroachment on the S–SE slopes of Mulanje Mt, and about 5 km^2 all around Thyolo Mt (the total forest area thus decreasing from 15 to 10 km^2). Felling for fire-wood is also damaging the hill forests near Blantyre, especially Soche and Bangwe. In central Malawi, the largest forest remnant, on Chirobwe Mt, suffers from illegal felling of understorey trees.

2.3. Fragmentation and isolation

Most forest isolates in Malawi are of strikingly small size; in addition, there is much fragmentation of the forest habitat in about half of the 50 or so localities mentioned in Table 1: an indication of this is given by the size of the largest patch of forest for each site. Single blocks of forest in excess of 500 ha are to be found in only seven localities: Misuku, E Nyika, N Viphya (Uzumara), N Lake-shore, Chirobwe, Mulanje and Thyolo.

On the Nyika, montane conditions prevail above 1800 m, and of the 1800 km^2 at 1800–2600 m, forest cover (*c.* 65 km^2) represents less than 4 per cent. On two other large plateaux, the North Viphya (*c.* 400 km^2 above 1600 m) and South Viphya (820 km^2 above 1600 m), it is of the same order, near 2 and 3 per cent respectively. By contrast, forest on the Malosa and Zomba plateaux (*c.* 50 km^2 above 1600 m) covers about a quarter of the total area, and on the Mulanje plateaux (200 km^2 above 1800 m) near one sixth. Mulanje

Mt receives more rainfall than any other massif in Malawi (Chapter 3) and is also unique in having a continuum of forest from lowland to montane levels on the southern and southeast slopes. Chisongeli Forest (900–2000 m, southeast Mulanje) still measured some 38 km^2 in 1974 although deforestation was well under way, and was the largest single block of forest in the country. Today, little forest remains below 1500 m, and the main patch of mid-altitude forest is in Ruo Gorge on the southern slopes (600 ha from 900 to 1800 m).

The most isolated forests in the country are on Chipata and Ntchisi Mts, separated by *c.* 100 km of woodland and cultivation from the S Viphya to the north, and from Chongoni-Dedza to the south (Fig. 1). Distances between forested highlands on either side of the Rift Valley (Kirk Range to the west, Zomba-Malosa to the east) are 70–80 km; the Dzalanyama Range is similarly isolated from Dedza and Chongoni Mts, Mangochi Mt from Chikala Hill, and the Malawi Hills from the Thyolo scarp and Chiperone Mt in adjacent Mozambique. All other forest sites are within 20–50 km of each other.

The chain of Tanzanian mountains starts only some 20 km north of the Misuku Hills, at Isoko, and the large Rungwe massif is 50 km distant. The most important forested mountain of northern Mozambique, Namuli, is 150 km ENE of Mulanje. But the highlands of eastern Zimbabwe and southern Mozambique are more distant, starting some 300 km SW of the Mulanje and Thyolo scarp, on the other side of the Zambezi plains; the Malawi Hills are 200 km north of Gorongoza Mt (the shortest distance between any two forests across the Zambezi) but have lowland forest only.

2.4. Structural features

The floristic composition and physiognomy of the forests have been described in detail in Dowsett-Lemaire (1985b, 1988a, 1989b, in press), but some structural features relevant to bird distribution are mentioned here. North of 14°S, the most mature and luxuriant forests are at submontane levels (especially Misuku, Nyika, N Viphya, Nthungwa on S Viphya, Ntchisi): these have a tall canopy (25–30 m, locally 40 m as in Mugesse) and 2–4 species of giant trees emerge to 35–45 m. Medium-sized trees (8–18 m) do not form a distinct stratum, but the lower storey does (4–8 m), and in the wetter forests (Misuku, E Nyika, Uzumara) it is practically impenetrable, with extensive thickets of Acanthaceae and *Dracaena*. Lianes are numerous, and edges of forest and clearings are often draped in walls of leaves. Fig trees of several species are prominent at Ntchisi, and in the Misuku Hills below 1900 m.

Climate, exposure and other factors are less favourable to the development of mature forest elsewhere. At Jembya, the canopy is still 25–30 m tall and fairly closed, but the understorey of this small patch (exposed on top of a flat plateau) is rather open. The forest patches on the eastern slopes of the Mafinga Mts have a somewhat broken canopy (20–25 m) and no emergents; those on Musisi Hill are taller (25–30 m, with some giant trees) but the canopy is interrupted by several big fire-induced gaps. Most of the S Viphya Plateau bears numerous scars of past fire damage: 80 per cent of the forest area at Chamambo, on the eastern edge of the plateau, is clothed in a secondary 18 m-tall *Bridelia–Macaranga* association, with tall forest restricted to the main stream gullies. At Kawandama, on an even more exposed southeast extension, the forest is smaller, more fragmented, with big fire-induced openings. Charred stumps of *Ocotea usambarensis* (a forest interior tree) are scattered in short grassland up to 200 m from the forest edge.

The small patches of montane forest on the central Nyika decrease in height (15 to 8 m) with increasing altitude (2250 to 2450 m), and no more than a few stunted trees grow at 2500 m, near the grassy peak (2607 m).

In contrast to submontane forests, mid-altitude forests in the north are rather localized and, with one or two exceptions (especially Ntchisi), are more fragmented and secondary in structure and species composition. The two most important areas (Kaningina, E Viphya) are locally connected by riverine forest to the Lake-shore, where a few blocks of once extensive lowland forest have been preserved. Away from streams, the canopy of these forests is dominated by two species of briefly deciduous *Brachystegia* trees (including flat-topped *B. microphylla*), 30–40 m tall, and widely scattered. Numerous lianes entangle the larger trees to the mid-stratum (10–18 m tall), and much moisture exudes from the understorey, often rendered impenetrable by thickets of woody creepers and shrubs.

South of 14°S submontane forests are considerably impoverished both structurally and in tree species composition (with a total of 150 species of trees and woody shrubs 2 m high and above, against more than 236 in the north). The canopy is usually less than 18 m high, fairly discontinuous, and with no emergents. Little pockets of taller forest (20–25 m) are found in a few places: on the eastern side of Chirobwe Mt (less than 50 ha), Mangochi Mt (less than 30 ha) and on some upper slopes of Mulanje Mt (at 1600 to 1900 m), where *Olea capensis* and *Widdringtonia* cedars emerge to 25–30 m. As on the Nyika, the height of montane forests on Mulanje decreases with altitude, and the upper limit of dwarf forest is near 2300 m.

By far the most luxuriant forests in the south are at medium altitudes: those on Chikala Hill and the southern slopes of Mulanje are among the finest in the country. They are dominated by flat-topped *Newtonia buchananii* which forms an upper canopy at 30–40 m. The forest on Thyolo Mt is also rather lush and moist, with three species of strangling *Ficus* as the dominant large trees. Soche and Bangwe Hills had some well-developed rain forest, now severely encroached upon. The forest on Lisau Saddle (in the rain shadow of Chiradzulu Mt) is 30 m tall but noticeably drier, with briefly deciduous canopy trees (flat-topped *Albizia*, *Celtis*, etc.) and a rather open understorey.

The structural features of the lowland forests in the south (foothills of Mulanje and Thyolo, Malawi Hills) differ strikingly from those of the Lake-shore forests in the north. The canopy is made up of many more tree species of which the crowns are usually contiguous, and the understorey is less dense and moist.

The substrate of the southern forests at all altitudes is more rocky than in the north, and holds less surface water.

Chapter 3. CLIMATE

The single rainy season lasts from November to March or April, during the austral summer, when temperatures remain fairly constant. It is followed by a cold dry season, with a drop of several degrees Celsius in May–August; spells of mist and occasional showers are then not infrequent on most mountains, hills and east-facing escarpments. Temperatures and drought increase from mid-August to October, October and November being the hottest months. Overall, the summer rains start and finish 2–3 weeks later in the north than in the south, and in the extreme north (e.g. Misuku) rainfall is still significant in May.

Mean temperatures vary monthly from 20–21°C to 24–25°C on the edge of lowland forest at 500–700 m (Lake-shore, Malawi Hills); from 13–16°C to 20–23°C at 1000–1400 m (e.g. Mzuzu, Shire Highlands); and gradually drop with increasing altitude, to reach 10–11°C in the coldest months (June–July) and 15–17°C in October–November

on the high plateaux of Nyika and Mulanje above 2000 m. Night frosts occur occasionally on most highlands from 1800–1900 m between May and August: on the Nyika the annual average of frosts remains low (seven nights at 2300 m) but is rather higher on Mulanje.

Mean annual rainfall is known from the following forest localities: Nkhata Bay (1700 mm at 500 m); Malawi Hills (1500 mm at 750 m); near Misuku (1450 mm at 1450 m, below the level of the forests); the Nyika Plateau (where it varies from 1000–1200 mm on the central plateau, at 2250–2500 m, to *c.* 1700 mm on the top of the eastern escarpment); the S Viphya Plateau (e.g. 1310 mm near Chikangawa, 1750 m); Zomba Mt (2200 mm at 1830 m); and Mulanje Mt (2400–3100 mm above 1900 m, also over 2400 mm on the southern slopes). A small proportion of this falls in the 'dry' season, usually 6–8 per cent, but more on Mulanje (17–21 per cent), the Thyolo area (14 per cent of 1327 mm for Thyolo town), the Malawi Hills (17 per cent) and the Nkhata Bay Lakeshore (19 per cent). The southwest Nyika, though relatively well forested, may be exceptional in being totally dry for the best part of six months, between May and October (Dowsett-Lemaire 1985b).

Chapter 4. EXPLORATION OF THE FORESTS

4.1. Vocal activity of forest birds

Overall, the best time to census territorial birds is from late August to December when vocal activity is at its peak, and no later than February–March when several breeding migrants terminate their stay.

In the majority of species, full song is heard in all months of the year, but less frequently outside the breeding season (Chapter 7)—*Tauraco* spp, *Apaloderma vittatum*, *Pogoniulus* spp., *Stactolaema* spp., *Alcippe*, *Andropadus nigriceps*, *Phyllastrephus flavostriatus*, *Cossypha anomala*, *Bradypterus* spp., *Apalis* spp., *Batis* spp., *Elminia*, *Laniarius* spp., *Malaconotus* spp. In several of these, adults are mated for life (Dowsett 1985) and contact is maintained by frequent vocal signals. In a few species full song is interrupted for a period from the end of breeding, particularly when moulting, but call-notes still make them easily detectable: *Phylloscopus ruficapilla* sings mostly from September to November, and *Phyllastrephus placidus* in the rains; *Sheppardia sharpei* and *Onychognathus walleri* resume song in March–April after an interruption of 3–4 months, and *Nectarinia mediocris* stop singing for no more than a few weeks at the end of the dry season. *Pogonocichla stellata* and *Sheppardia gunningi* produce a subsong in winter.

By contrast, the following become (almost) totally silent for six months or more each year: the rail *Sarothrura elegans* and some cuckoos (heard in the rains only, but of uncertain resident status), *Turdus* spp., *Alethe* spp., the ground doves *Turtur tympanistria* and *Aplopelia larvata*. On the Nyika, *Turtur* is rarely heard outside August–October, but may be vocal at other times elsewhere; *Aplopelia* is active mostly from October to January. The majority of *Turdus olivaceus* stop singing in December, and *T. gurneyi* in January, though some may be heard occasionally until the end of the rains (in May in the north). *Alethe* spp. are very quiet throughout the dry season until September or October (Dowsett-Lemaire 1987).

4.2. Field coverage

Field work in the forests north of 14°S (other than on the Nyika) covered a period of nine months between September 1982 and July 1983, and a couple of weeks in late 1986,

although visits to the Lake-shore and Ntchisi started in 1980. Seven months (between July 1983 and June 1984) were spent in the forests to the south. All forests were explored at least once in the critical period of late August to January, except Musisi in the north (inaccessible in the rains, visited in June) and Dzalanyama in the south (seen in March and June). Overall, the duration of visits was proportional to the size of the forests—for instance, a total of 24 days was spent in the extensive Misuku forests, at two seasons (September–October, February–March), but small patches in the Kirk Range received single-day visits (in November). In relation to size or altitude, the following localities are considered insufficiently prospected: the central part of Matipa Forest in the Misukus (a block of 13.5 km^2) was not reached; Kuwilwe on the Lake-shore was visited once (December) from 500 to 700 m (but strips of forest ascend to *c.* 1200 m); the northern side of Mulanje Mt, including the outlying Mchese Mt, was not seen. The exploration of the forests on Mulanje was concentrated in the areas with the largest remnants: on the southeast slopes (to 1800 m), southern slopes (to 1300 m in Ruo Gorge) and Lichenya Plateau (for details, see Dowsett-Lemaire 1988a).

Apart from the northern side of Mulanje, the only major forest locality (i.e. with more than 30 ha) in the country that remains unexplored is Mauze Hill (1363 m) on the Mozambique border. The patch of mid-altitude forest, partly in Mozambique, was never protected and shrank from 400 to 200 ha in the 1970s; it was never visited by a zoologist.

Outside the Nyika studies, mist-netting was carried out only in Matipa Forest (western side, October); Kalwe (Lake-shore) where 200 m of net lines were operated for a few days in January, April and June; and irregularly at the foot of Mulanje (Esperanza). Voices of most species were tape-recorded; tape playback as well as 'squeaking' (a noise mouthed by the observer, imitating birds' distress calls) were frequently used to elicit response of elusive species. Estimations of bird densities are based essentially on territorial songs located in areas of forest measured from aerial photographs.

From the mid-1970s, there was renewed interest in the avifauna shown by expatriates based mostly in southern and central Malawi. Reliable sight-records of forest birds have been used here, when additional to my observations; names of regular observers are abbreviated in the text as follows: JDA (J.D. Atkins), MGD (M.G. Douglas), NDH (N.D. Hunter), NJS (N. Johnston-Stewart). Johnston-Stewart (1984) published locally on the distribution of forest birds in southern Malawi: unfortunately, his account contains a surprising number of errors of fact and interpretation and cannot be utilized here. Many of my own observations were made in conjunction with R.J. Dowsett.

Chapter 5. BIOGEOGRAPHICAL ELEMENTS

Moreau (1966), in his major work on the biogeography of the African bird faunas, distinguished mainly between forest and non-forest communities, and within forest, between montane and lowland elements. Though he discussed regional patterns of species richness, and attempted to compare them, he did not publish lists of species to support his arguments, nor did he present a firm zoogeographical framework. One problem was the lack of an accurate map and description of vegetation types on the continent, and this has recently been remedied by White's (1983a) major work. White divided the African flora into 18 geographically exclusive regional centres of endemism and transition zones. These phytochoria, especially the centres of endemism, are usually characterized by one main vegetation type, i.e. there is concordance of chorology and physiognomy.

Malawi lies within two main centres of endemism, and a third one which is a

composite area: 1) the Zambezian Region (*sensu* White 1983a, also called 'Southern Woodland Zone' by mammologists such as Ansell (1978)), whose most characteristic and widespread vegetation type is *Brachystegia*-dominated woodland (or 'miombo'); 2) the Afromontane Region, an archipelago-like region of high endemism in plants (White 1978, 1983a), butterflies (Carcasson 1964), birds (Moreau 1966, Dowsett 1986), but of much more limited endemism in mammals (e.g. Kingdon 1971), the two main vegetation formations being evergreen forest and grassland; 3) the Eastern Forest Region. Phytogeographically, the latter is a composite area extending on the eastern side of Africa from Ethiopia to the Eastern Cape of South Africa; it encompasses the coastal forests of East and southeast Africa, and forest outliers in the Lake Victoria, Somalia–Masai Region and eastern half of the Zambezian Region (west to about 28°E: Dowsett-Lemaire 1988a: 83). The Eastern Forest Region has been given much the same geographical limits by mammologists (e.g. Grubb 1983).

Many bird species are habitat-tied, and a preliminary investigation reveals great similarities between phytochoria and zoochoria. Pending a review of zoogeographical regions in the light of White's work, the following elements can be recognized for present purposes.

1. Montane (or Afromontane) endemic element: a species limited in its range to the Afromontane Region. The lower altitudinal breeding limit of montane forest birds varies with species but is often 1200–1600 m in central Africa (e.g. Itombwe massif in Zaïre: Prigogine (1978); northern Malawi: this study). It is noticeably lower on mountains influenced by cool oceanic currents (thus nearer 600–1000 m on Mt Cameroun: Stuart (1986); and (500) 900–1200 m on the Usambara and Uluguru Mts in eastern Tanzania: Stuart & Jensen (1981, 1985)), and decreases with increasing latitude, to approach sea level in the Cape Province of South Africa. Examples include *Apaloderma vittatum*, *Pogonocichla stellata*.

2. Montane near-endemic element: a species predominantly montane, but also resident in small forest outliers at intermediate elevations. Typical examples are *Aplopelia larvata* and *Apalis cinerea*, both of which are found locally away from mountains, in mid-altitude forest on the Zambezi–Zaïre watershed and some other upland areas. Also a species essentially confined to mountains, but with a wide altitudinal range including locally the foothills (e.g. *Coracina caesia*).

3. Eastern endemic element: a species confined to the Eastern Forest Region. All are characteristic members of lowland forest communities, though some may transgress into other habitats (e.g. *Tauraco* spp.), and may ascend the mountains, to medium (e.g. *Oriolus chlorocephalus*) or high levels (e.g. *Bycanistes brevis*, which has one of the widest altitudinal ranges, from 0 to 2600 m). The ecology of *Cercococcyx montanus* varies with latitude, this cuckoo inhabiting lowland forest and thicket between 10 and 20°S, but mostly montane forest north to the equator.

4. Pluriregional element: a species present in two or more of White's phytochoria. Many occur in forest (secondary and/or primary formations) of the Guineo–Congolian Region (e.g. *Stephanoaetus coronatus*, *Dicrurus ludwigii*, *Andropadus virens*, *Malaconotus multicolor*, *Nectarinia olivacea*), while others have a Zambezian plus Eastern distribution (e.g. *Tauraco schalowi*, *Phyllastrephus cerviniventris*), or a wider, circum-Congo distri-

bution (e.g. *Campethera abingoni*, *Cossypha heuglini*, *Apalis flavida*, *Cinnyricinclus leucogaster*); the latter category consists of species more frequent in wooded vegetation other than rain forest.

Species commonly occurring in more than one vegetation type could be termed ecological transgressors—an expression so far used by phytogeographers only.

Chapter 6. ECOLOGY, DISTRIBUTION AND MOVEMENTS OF FOREST BIRDS

The distribution of forest birds in the country is shown in the form of tables (Tables 2, 3, 4, one for each natural region of Malawi) and these are referred to at the beginning of each account. The text for each species gives the biogeographical element it belongs to, describes feeding niche, degree of abundance or exact densities where known (some of the forest stenotypic elements and endangered forms received more attention than others in this respect), other habitat types occupied where relevant, altitudinal range in the breeding season, and movements where known.

A total of 37 non passerines and 68 passerines are found in the canopy and/or interior of rain forest; 67 species (64 per cent) are essentially or wholly forest elements in Africa. The 38 Montane (near-) endemics are all typical forest birds, but four of them are also encountered in tall secondary growth (*Chloropeta similis*, two *Apalis* spp., *Laniarius fuelleborni*) and one (*Turdus olivaceus*) has adapted to plantations, gardens and dry forest locally, outside Malawi. Most of the 14 Eastern endemics are (essentially) forest elements, but three (*Tauraco* spp., *Cercococcyx montanus*) are frequent in other habitats. Of 53 Pluriregional species, 21 are characteristic of primary or secondary formations of Guineo-Congolian rain forest (they are indicated by (GC) below), and a few others are also mainly forest elements (e.g. *Phyllastrephus cerviniventris*, *Ploceus bicolor*).

In addition, brief mention is made of 54 marginal species, either non-breeding visitors to forest, species nesting in forest but hunting outside (raptors) or present at the ecotone forest-woodland or forest-grassland. The distribution of the montane elements among these is given in Appendix 3, as it is relevant to some biogeographical trends discussed in Chapter 8.

ACCIPITRIDAE

Five species belonging to four genera hunt, at least part of the time, inside forest; of these, three (*Accipiter tachiro*, *Buteo*, *Stephanoaetus*) have noisy territorial displays (*Stephanoaetus* in all months of the year) and are easily detected. By contrast, *A. melanoleucus* is usually silent and has certainly been under-recorded—its distribution is not tabulated.

Black Goshawk *Accipiter melanoleucus*. Pluriregional (GC). Nests from forest are known from Misuku, Nyika, Ntchisi, Chiradzulu, Thyolo Mt, Malawi Hills, but more often seen in open country and woodland (also *Pinus* and *Eucalyptus* plantations) than in forest. 50–2300 m.

African Goshawk *Accipiter tachiro*. Pluriregional. Tables 2, 3, 4. Hunts small mammals and birds in forest understorey (seen snatching a *Phyllastrephus flavostriatus* off a trunk) as well as outside. Widespread, but in some areas more common in miombo woodland than forest—as on N Lake-shore where forest may be too dense for easy hunting—or in

Continued on p. 21

Table 2. *Bird species proven or likely to breed in the following rain forests of northern Malawi*

montane (central Nyika, 2250–2450 m), submontane (Misuku to S Viphya and part of Ntchisi, 1450–2300 m), mid-altitude (Kaningina to Chipata and part of Ntchisi, 1100–1500 m), and lowland (Lake-shore, 500–700 m). x = recent record (present study, in ( ) when from another source); o = pre-1950 record; *x* and *o* = breeding confirmed; v = visitor or wanderer.
Biogeographical status follows species' names: M = Montane (near-) endemic; E = Eastern endemic; P = Pluriregional. Locality totals do not include visitors.

					Nyika			N Viphya			S Viphya							Lake-shore			
Bird species	Misuku	Mafinga	Jembya	Musisi	SW	C	E	Uzumara	Chimaliro	Choma	Nthungwa	Chamambo	Kawandama	Ntchisi	Kaningina	E Viphya	Chipata	Kalwe	Nkuwadzi	Mzuma	Kuwilwe
Accipiter tachiro (P)	x	x	x	x	*x*	x	x	x	x	.	.	.	.	x	.	.	.	.	.	x	.
Buteo oreophilus (M)	x	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hieraaetus ayresii (P)	x	.	.	.	.	.	x	.	.	.	.	.	.	x	.	.	.	.	.	.	x
Stephanoaetus coronatus (P)	x	x	.	x	*x*	.	x	*x*	*x*	.	*x*	x	.	x	.	.	x	.	x	x	x
Francolinus squamatus (P)	.	.	.	.	.	.	.	.	.	.	.	x	x	.	.	x	.	.	.	.	.
Guttera edouardi (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.
Sarothrura elegans (P)[a]	x	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.
Columba arquatrix (M)	x	.	x	x	*x*	x	x	x	x	x	x	x	*x*	x	.	.	.	.	.	.	.
Turtur afer (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	x
T. tympanistria (P)	x	x	x	x	*x*	.	x	x	x	x	x	x	x	*x*	x	x	x	.	x	x	x
Aplopelia larvata (M)	*x*	x	x	x	*x*	.	x	x	x	x	x	x	x	*x*	x	.	x	.	.	.	.
Tauraco porphyreolophus (E)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	x
T. schalowi (P)[b]	x	x	x	x	*x*	x	x	x	x	x	x	*x*	x	x	x	x	x	.	.	.	.
Cercococcyx montanus (E)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	x
Ceuthmochares aereus (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	.	x	x	x	.
Centropus superciliosus (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	x
Strix woodfordii (P)	*x*	x	x	x	*x*	*x*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Schoutedenapus myoptilus (M)	x	.	x	.	*x*	.	x	*x*	.	.	.	.	.	.	.	.	.	.	.	.	.
Apaloderma narina (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	.	v	x	x	x
A. vittatum (M)	x	x	x	x	*x*	.	x	x	x	.	.	(v)	.	x	.	.	.	.	.	.	.

Table 2 cont.

Bird species	Misuku	Mafinga	Jembya	Musisi	Nyika SW	Nyika C	Nyika E	N Viphya Uzumara	N Viphya Chimaliro	S Viphya Choma	S Viphya Nthungwa	S Viphya Chamambo	S Viphya Kawandama	Ntchisi	Kaningina	E Viphya	Chipata	Lake-shore Kalwe	Lake-shore Nkuwadzi	Lake-shore Mzuma	Lake-shore Kuwilwe
Tockus alboterminatus (P)	x	x	x	x	x	.	x	x	x	.	x	.	x	x	x	.	x	x	.	x	x
Bycanistes brevis (E)	x	.	.	.	v	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
B. bucinator (P)	.	.	x	x	x	.	.	x	x	.	.	.	.	x	x	x	x	x	x	x	x
Stactolaema olivacea (E)	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pogoniulus bilineatus (P)	.	.	.	.	.	.	x	x	x	.	x	x	x	.	x	x	.	v	x	x	x
P. leucomystax (M)	x	x	x	x	x	.	x	x	x	.	x	x	x	x	.	v	v	.	.	.	.
Indicator variegatus (P)	x	x	.	x	x	x	.	.	x	.	.	x	x	.	.	x	.	.	.	.	.
Campethera abingoni (P)	.	.	.	.	x	.	.	.	.	x	.	.	.	.	.	x	x	.	.	.	.
Dendropicos griseocephalus (M)	x	x	x	x	x	x	x	x	x	.	x	x	x	.	.	x	.	.	.	.	.
Smithornis capensis (P)*	x	x	.	.	x	.	.	x	.	.	.	.	.	x	x	x	.	x	x	x	x
Oriolus larvatus (P)	v	.	.	.	v	.	.	(v)	.	.	.	.	.	x	.	.	x	x	.	.	.
Alcippe abyssinica (M)	.	.	.	.	x	x	x	x	x	.	.	x	.	.	.	.	.	.	.	.	.
Trichastoma pyrrhopterum (M)	.	.	.	.	.	.	x	x	x	.	.	.	.	.	.	.	.	.	.	.	.
Campephaga flava (P)	x	.	x	.	x	.	.	.	.	.	x	.	.	x	x	x	x	.	v	.	.
Andropadus masukuensis (M)	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
A. milanjensis (M)	x	.	x	x	.	.	x	x	x	x	x	x	x	x	x	x	.	.	.	.	.
A. nigriceps (M)	.	x	x	x	x	x	x	x	x	x	x	x	x	.	.	.	.	.	.	.	.
A. virens (P)	x	x	x	x	x	.	.	x	x	x	x	.	.	x	x	x	x	x	x	x	x
Chlorocichla flaviventris (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	.	x
Phyllastrephus cerviniventris (P)	.	x	.	x	.	.	.	.	.	.	.	.	.	x	.	x	x	.	o	.	x
P. flavostriatus alfredi (M)	.	x	x	x	x	.	x	x	x	x	x	x	x	x	.	.	v	.	.	.	.
P. placidus (M)	x	.	.	.	.	.	.	x	.	.	.	x	x	x	x	x	.	.	.	.	.
P. terrestris (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	x
Nicator gularis (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	.	x	x	x	x
Erythropygia quadrivirgata (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	x	x
Alethe fuelleborni (M)	x	x	x	.	x	x	x	x	x	x	x	.	.	.	.	.	.	.	.	.	.
Sheppardia gunningi (E)	.	.	.	.	.	.	.	.	.	x	.	.	.	.	x	x	.	x	x	x	x

Table 2 cont.

Bird species	Misuku	Mafinga	Jembya	Musisi	Nyika SW	Nyika C	Nyika E	N Viphya Uzumara	N Viphya Chimaliro	N Viphya Choma	S Viphya Nthungwa	S Viphya Chamambo	S Viphya Kawandama	Ntchisi	Kaningina	E Viphya	Chipata	Lake-shore Kalwe	Lake-shore Nkuwadzi	Lake-shore Mzuma	Lake-shore Kuwilwe
S. sharpei (M)	.	.	.	o	x	.	x	x	.	.	.	.	.	.	.	.	.	.	.	.	.
Pogonocichla stellata (M)	x	x	x	x	x	x	x	x	x	.	x	x	x	x	.	v	v	v	v	v	.
Cossypha anomala (M)	.	.	.	.	x	x	x	x	x	.	x	x	x	.	.	.	.	.	.	.	.
C. heuglini (P)	.	x	.	.	.	.	.	.	.	x	.	.	.	x	x	x	x	.	.	x	x
C. natalensis (P)	.	.	.	.	.	.	.	.	.	x	.	.	.	x	x	x	.	x	x	x	x
Modulatrix stictigula (M)	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Turdus gurneyi (M)	x	x	x	x	x	.	x	x	x	x	x	x	x	x	.	.	.	.	.	.	.
T. olivaceus (M)	x	.	.	x	x	x	x	x	x	.	.	x	x	.	.	.	.	.	.	.	.
Bradypterus lopezi (M)	x	.	.	.	x	x	x	x	x	.	x	x	x	x	.	x	.	.	.	.	.
Chloropeta similis (M)	.	.	.	.	x	x	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phylloscopus ruficapilla (M)	x	x	x	x	.	.	x	x	x	.	.	.	.	x	.	v	.	.	.	.	.
Apalis chapini (M)	x	x	x	x	x	.	x	x	x	x	x	x	x	x	x	x	x	.	.	v	.
A. cinerea (M)	x	x	x	x	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
A. flavida (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	x	.	x	x	x	x
A. thoracica (M)	x	o	.	.	x	x	x	x	x	x	x	x	x	.	.	.	.	.	.	.	.
Camaroptera brachyura (P)	x	x	x	x	.	.	.	x	.	.	.	.	.	x	x	x	x	x	x	x	x
Muscicapa adusta (P)	x	x	x	x	x	.	x	x	.	.	x	x	x	x	.	x	x	.	.	v	.
M. caerulescens (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	x	x	x	x	x
Batis capensis (M)	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	.	.	.	.	.
B. mixta (E)	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Platysteira peltata (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	x	x	x	x	x
Elminia albonotata (M)	x	x	x	.	x	x	x	x	x	x	x	x	x	.	x	x	.	.	.	.	.
Trochocercus cyanomelas (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	.	x	x	x	x
Terpsiphone viridis (P)	x	x	x	.	x	.	.	x	.	.	x	x	x	x	x	x	x	.	.	.	.
Dryoscopus cubla (P)	x	x	x	x	x	.	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Laniarius aethiopicus (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x	.	.
L. fuelleborni (M)	x	.	.	.	x	x	x	x	x	.	x	x	x	.	.	x	.	.	.	.	.

Table 2 cont.

Bird species	Nyika							N Viphya			S Viphya							Lake-shore			
	Misuku	Mafinga	Jembya	Musisi	SW	C	E	Uzumara	Chimaliro	Choma	Nthungwa	Chamambo	Kawandama	Ntchisi	Kaningina	E Viphya	Chipata	Kalwe	Nkuwadzi	Mzuma	Kuwilwe
Malaconotus multicolor (P)	v	.	.	.	*x*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Onychognathus walleri (M)	*x*	.	.	.	*x*	.	*x*	*x*	x	.	.	.	.	.	.	.	.	.	.	.	.
Cinnyricinclus leucogaster (P)	x	x	x	.	*x*	.	.	.	.	.	x	x	.	.	.	.	.	.	.	.	.
Anthreptes collaris (P)	x	x	x	x	.	.	.	x	.	.	.	.	x	x	x	x	.	.	.	.	.
Nectarinia mediocris (M)	*x*	x	x	x	*x*	x	x	x	x	x	x	*x*	x	.	.	x	.	.	.	.	.
N. olivacea (P)	*x*	x	x	x	*x*	.	x	x	x	.	x	x	x	x	x	x	x	x	x	x	x
N. verticalis	x	x	x	x	*x*	.	.	.	x	.	x	x	.	.	.	x	.	.	.	.	.
Zosterops senegalensis (P)	*x*	x	x	x	*x*	*x*	*x*	x	*x*	x	x	x	x	x	x	x	x	x	x	x	x
Cryptospiza reichenovii (M)	x	.	x	x	*x*	.	x	x	x	.	x	x	x	(x)	.	.	.	.	.	.	.
Hypargos niveoguttatus (P)	x	x	.	.	.	.	.	.	.	.	.	.	.	x	x	*x*	x	x	*x*	*x*	x
Linurgus olivaceus (M)	x	.	.	.	.	.	x	x	.	.	.	.	.	.	.	.	.	.	.	.	.
Total number of species	51	36	36	34[c]	46	20[d]	41	46	39	22	34	35	33	42	30	38	23	26	30	31	31
					53			52			43[e]							36			

[a] Likely to be under-recorded (see text).
[b] Noted at Kuwilwe from 700 m on dry ridges outside forest.
[c] Incompletely surveyed (winter visit only).
[d] Total number is 22, as two marginal species (*Cossypha caffra*, *Bradypterus cinnamomeus*) occur inside small patches.
[e] Total number of 43 includes *Accipiter tachiro*, *Smithornis capensis* and *Cossypha heuglini* occurring on central plateau in small forests.

Table 3. *Bird species proven or likely to breed in the following rain forests of south-central Malawi*
submontane and montane (Chongoni to Chimbia, 1600–2150 m), mid-altitude (Dzalanyama, Kirk Range relicts, 1250–1600 m) and lowland (Thambani, 1100–1200 m). Symbols as in Table 2.

						Kirk Range				
Bird species	Dzalanyama	Chongoni	Mlunduni	Dedza	Chirobwe	Mvai	Dzonze	Chimbia	mid-alt.	Thambani
Accipiter tachiro (P)	x	x	.	x	x	(v)	x	(v)	.	x
Stephanoaetus coronatus (P)	x	x	.	.	.	.	.	.	.	x
Sarothrura elegans[a] (P)	.	.	.	.	o	.	.	.	.	.
Columba arquatrix (M)	(x)	x	.	*x*	x	.	.	.	.	.
Turtur tympanistria (P)	x	x	x	x	x	x	x	x	x	x
Aplopelia larvata (M)	x	x	.	*x*	x	x	x	.	x	x
Tauraco porphryreolophus (E)	.	.	.	.	.	.	.	.	.	x
T. schalowi (P)	x	x	x	x	*x*	x	x	x	x	.
Chrysococcyx cupreus (P)	(x)	.	.	.	.	x	.	.	.	x
Strix woodfordii[a] (P)	.	*x*	.	*x*	.	.	x	.	x	x
Apaloderma narina (P)	.	.	.	.	.	.	.	.	.	x
A. vittatum (M)	.	.	.	.	x	.	.	.	.	.
Tockus alboterminatus (P)	x	.	.	.	.	.	.	.	.	x
Bycanistes brevis (E)	(x)	.	.	.	x	(v)	(v)	(v)	.	x
Pogoniulus leucomystax (M)	.	*x*	x	x	x	x	x	(v)	x	.
Indicator minor (P)	.	.	.	.	.	.	.	.	x	x
I. variegatus (P)	x	x	.	.	.	.	.	.	x	.
Campethera abingoni (P)	x	.	.	.	.	x	.	.	x	x
Dendropicos fuscescens (P)	.	x	.	*x*	.	x	.	.	*x*	x
Smithornis capensis (P)	.	.	.	.	.	.	.	.	x	x
Oriolus larvatus (P)	.	.	.	.	.	.	.	v/x	x	.
Campephaga flava (P)	.	.	.	.	.	.	.	.	x	x
Andropadus milanjensis (M)	.	.	.	.	x	.	.	*x*	x	.
Chlorocichla flaviventris (P)	.	.	.	.	.	x	.	.	.	.
Phyllastrephus cerviniventris (P)	x	x	.	.	(x)	x	.	.	x	x
P. terrestris (P)	.	.	.	.	.	.	x	.	x	o
P. placidus (M)	.	x	x	.	x	x	x	x	x	x
Pogonocichla stellata (M)	*x*	x	x	*x*	x	x	x	x	*x*	(v)
Cossypha heuglini (P)	x	x	.	.	.	x	.	.	.	.
C. natalensis (P)	.	.	.	.	.	.	.	.	x	x
Turdus gurneyi (M)	.	x	x	x	x	v/x	x	.	.	.
T. olivaceus (M)	.	.	.	o	.	.	.	.	.	.
Bradypterus lopezi (M)	x	*x*	x	x	x	x	*x*	x	x	.
Apalis chapini (M)	x	*o*	.	.	x	.	.	.	.	.
A. flavida (P)	.	.	.	.	.	.	x	.	x	x
A. thoracica (M)	x	x	x	*x*	x	x	x	x	x	x
Camaroptera brachyura (P)	.	.	.	.	.	.	.	.	x	x

Table 3 contd

Bird species	Dzalanyama	Chongoni	Mlunduni	Dedza	Chirobwe	Kirk Range: Mvai	Dzonze	Chimbia	mid-alt.	Thambani
Muscicapa adusta (P)	x	x	x	.	x	x	x	x	x	x
M. caerulescens (P)	.	.	.	.	.	.	.	.	.	x
Batis capensis (M)	.	x	x	x	x	x	x	x	x	.
Platysteira peltata (P)	x	.	.	.	.	.	.	.	x	x
Elminia albonotata (M)	.	x	x	x	x	x	x	x	x	.
Trochocercus cyanomelas (P)	.	.	.	.	.	.	.	.	.	o
Terpsiphone viridis (P)	x	x	.	.	.	x	.	x	x	x
Dryoscopus cubla (P)	x	x	x	x	x	x	x	x	x	x
Laniarius aethiopicus (P)	.	x	x	x	x	x	x	x	x	.
Malaconotus olivaceus (M)	.	x	.	x	x	x	x	.	x	.
Cinnyricinclus leucogaster (P)	.	.	.	.	.	.	.	.	x	.
Anthreptes collaris (P)	.	x	.	.	x	x	x	.	x	x
Nectarinia mediocris (M)	.	x	x	x	x	x	x	x	x	.
N. olivacea (P)	x	x	.	.	x	x	x	.	x	x
Zosterops senegalensis (P)	x	x	.	x	x	x	x	x	x	x
Ploceus bicolor (P)	.	.	.	.	.	.	x	.	x	x
Cryptospiza reichenovii (M)	x	x	.	x	x	.	.	.	.	.
Hypargos niveoguttatus (P)	.	.	.	.	.	.	.	.	.	x
Total number of species	24	30	14	21[b]	28	25	24	15	36	33

[a] Likely to be under-recorded.
[b] Four more species are recorded from the lower slopes (riverine forest, 1500–1600 m): *Sarothrura elegans*, *Muscicapa adusta*, *Terpsiphone viridis* and *Anthreptes collaris*.

forest-grassland mosaic rather than in large forest blocks—as on S Viphya. Forest-grassland territory of *c.* 3 km^2 per pair on SW Nyika at 2150–2200 m. Also in deciduous forest, miombo and other woodland types. 50–2400 m.

Forest Buzzard *Buteo oreophilus*. Montane endemic. Table 2: only in extensive submontane forest and never seen hunting outside. Probably no more than 6–7 pairs in 34 km^2 on E Nyika, and fewer Misuku Hills. 1600–2350 m.

Ayres' Hawk Eagle *Hieraaetus ayresii*. Pluriregional (GC). Tables 2, 4. Sparse. Also in various woodland types and deciduous forest. 50–2300 m.

Crowned Eagle *Stephanoaetus coronatus*. Pluriregional (GC). Hunts in forest as well as outside. Prey remains below a nest (Nyika) of *Heterohyrax brucei*, *Cephalophus* antelopes (two species possible: *C. natalensis* and *C. monticola*); small rodent carried to nest, and seen chasing monkeys *Cercopithecus* (*mitis*) *albogularis*; a specimen collected by A. Whyte had eaten a young klipspringer *Oreotragus oreotragus*. Four pairs in 45 km^2 of forest-grassland on SW Nyika (2000–2200 m) but forage also in woodland below the

Continued on p. 24

Table 4. *Bird species proven or likely to breed in the following rain forests of southeast Malawi.*
submontane and montane (Namizimu, Mangochi, Zomba, upper Mulanje, 1500–2300 m), mid-altitude (Chikala, Lisau to Thyolo, 1170–1600 m, and middle Mulanje 900–2300 m), and lowland (tea estates near Thyolo, lower Mulanje, Malawi Hills, 600–1100 m). Symbols as in Table 2.

				Shire Highlands[a]								Mulanje			
Bird species	Namizimu	Mangochi	Chikala	Zomba	Lisau	Ndirande	Soche	Bangwe	Malabvi	Thyolo	tea estate	lower	middle	upper	Malawi Hills
Accipiter tachiro (P)	x	x	x	x	x	.	.	.	.	x	x	x	x	x	x
Hieraaetus ayresii (P)	.	.	.	.	.	.	.	.	.	x	.	.	.	x	x
Stephanoaetus coronatus (P)	.	x	x	x	x	.	.	.	.	x	.	.	x	.	x
Guttera edouardi (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x
Sarothrura elegans (P)[b]	.	.	.	x	.	.	(x)	.	.	x	.	x	x	(x)	.
Columba arquatrix (M)	.	.	.	*x*	.	(v)	o/v	.	.	o/v	.	o/v	v	*x*	(v)
C. delegorguei (P)	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.
Turtur tympanistria (P)	.	x	x	x	x	x	*x*	x	x	*x*	x	x	x	x	*x*
Aplopelia larvata (M)	x	x	x	x	x	x	*x*	x	.	*x*	*x*	v	x	*x*	(v)
Tauraco livingstonii (E)	x	x	x	x	x	x	x	x	x	x	x	x	x	*x*	.
T. porphyreolophus (E)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x
Chrysococcyx cupreus (P)	.	.	x	.	x	(x)	x	x	.	x	x	x	.	.	.
Ceuthmochares aereus (P)	.	.	.	.	.	.	.	.	.	x	x	x	x	.	x
Strix woodfordii (P)[b]	.	x	x	x	x	x	x	.	.	x	x	x	x	x	x
Schoutedenapus myoptilus (M)	.	.	.	v	.	.	.	.	.	*x*	.	v	x	x	.
Apaloderma narina (P)	.	.	x	.	.	.	.	.	.	(v)	(v)	x	x	.	x
A. vittatum (M)	.	(v)	.	v	o	.	x	(v)	v	x	(v)	.	o	*x*	.
Tockus alboterminatus (P)	x	x	x	x	x	.	x	x	.	*x*	x	x	x	.	x
Bycanistes brevis (E)	.	.	.	.	o	.	.	.	.	v	(v)	x	x	.	x
B. bucinator (P)	x	x	x	.	.	.	.	.	.	x	x	x	x	.	x
Stactolaema leucotis (E)	.	.	*x*	.	x	*x*	*x*	x	x	*x*	x	x	.	.	x
Stactolaema olivacea (E)	.	.	.	.	.	.	.	.	.	*x*	.	.	.	.	.
Pogoniulus bilineatus (P)	.	.	x	x	x	*x*	*x*	*x*	x	*x*	x	x	x	x	x
P. leucomystax (M)	.	.	.	.	.	.	(v)	.	.	.	.	.	.	*x*	.
P. simplex (E)	x	x	.	.	.	.	.	.	.	.	.	.	.	.	.
Indicator minor (P)	.	.	x	.	x	x	(x)	x	x	x	x	x	v	.	x
I. variegatus (P)	.	x	x	x	x	.	x	.	.	x	*x*	x	x	.	x
Campethera abingoni (P)	.	x	x	x	x	x	x	.	x	*x*	x	x	x	.	*x*
Denropicos fuscescens (P)	.	*x*	.	.	.	x	x	x	x	.	.	*x*	x	.	.
Smithornis capensis (P)[b]	.	.	x	.	(x)	x	.	.	.	*x*	*x*	x	x	.	x
Dicrurus ludwigii (P)	x	.	x	.	x	x	*x*	x	x	*x*	*x*	x	x	.	x
Oriolus chlorocephalus (E)	.	.	x	.	(v)	.	o	.	.	*x*	*x*	.	.	.	.
O. larvatus (P)	.	.	v/x	.	v/x	v/x	v/x	.	v/x	o	.	.	.	.	.
Alcippe abyssinica (M)	x	x	.	.	.	.	.	.	.	.	.	.	.	.	.
Coracina caesia (M)	.	.	.	.	o	.	.	.	.	*x*	.	.	.	.	.
Campephaga flava (P)	x	.	x	.	x	x	x	(x)	.	(x)	x	x	x	.	(v)
A. milanjensis (M)	.	*x*	x	x	x	x	*x*	x	x	x	x	v	x	x	.
A. nigriceps (M)	.	.	.	x	.	.	.	.	.	.	.	v	v	*x*	.

Table 4 contd.

Bird species	Shire Highlands[a]											Mulanje			
	Namizimu	Mangochi	Chikala	Zomba	Lisau	Ndirande	Soche	Bangwe	Malabvi	Thyolo	tea estate	lower	middle	upper	Malawi Hills
A. virens (P)	x	x	x	.	(x)	x	x	(x)	o	x	x	x	x	.	.
Chlorocichla flaviventris (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	(x)
Phyllastrephus cerviniventris (P)	x	x	x	.	x	x	.	.	.	x	x	x	.	.	(x)
P. flavostriatus vincenti (E)	.	.	x	.	x	x	x	x	x	x	x	x	x	.	x
P. placidus (M)	x	x	x	x	x	x	x	x	x	x	x	v/x	x	x	.
P. terrestris (P)	.	.	.	.	x	x	.	.	.	.	.	x	.	.	x
Nicator gularis (P)	.	.	.	.	.	.	.	.	.	o	x	x	.	.	x
Erythropygia quadrivirgata (P)	.	.	x	.	x	.	.	.	.	.	.	x	.	.	x
Alethe choloensis (M)	x	x	x	x	x	x	x	x	x	x	.	v/x	x	x	.
Pogonocichla stellata (M)	x	x	x	x	x	x	x	x	x	x	(v)	v	x	x	v
Cossypha anomala (M)	.	.	.	.	.	.	.	.	.	.	.	.	x	x	.
C. heuglini (P)	x	x	x	.	x	x	x	x	x	x	x	x	.	.	.
C. natalensis (P)	x	x	x	.	x	x	x	x	x	x	x	x	x	.	x
Turdus fischeri (M)[b]	.	.	.	.	x	.	x	.	.	x	.	(v)	.	x	.
T. gurneyi (M)	x	x	x	x	(x)	x	x	x	.	x	(v)	.	x	x	.
T. olivaceus (M)	.	.	.	x	.	.	o	.	.	x	.	(v)	.	x	.
Bradypterus lopezi (M)	x	x	x	x	(x)	x	x	x	x	x	(x)	v	x	x	.
Phylloscopus ruficapilla (M)	.	x	x	x	.	.	.	v/x	.	x	(v)	v	x	x	.
Apalis chariessa (E)	.	.	x	.	x	x	x	x	x	x	x	.	x	.	.
A. flavida (P)	x	.	x	.	x	x	x	x	x	(x)	x	x	x	.	x
A. melanocephala (E)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	.
A. thoracica (M)	.	.	.	x	.	.	.	.	.	.	.	v	x	x	.
Camaroptera brachyura (P)	x	x	x	.	x	x	x	x	x	x	x	x	x	.	x
Muscicapa adusta (P)	x	x	x	x	x	x	x	(x)	x	x	x	v	x	.	.
M. caerulescens (P)	.	.	.	.	.	.	.	.	.	.	.	x	.	.	x
Batis capensis (M)	.	.	x	x	x	x	x	x	x	x	.	v	x	x	.
B. fratrum (E)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x
Platysteira peltata (P)	x	x	x	.	x	x	(x)	.	.	x	x	x	x	.	x
Elminia albonotata (M)	x	x	x	x	.	x	x	x	x	x	(v)	v	x	x	.
Trochocercus cyanomelas (P)	.	.	.	.	v/x	.	.	.	.	x	x	x	x	.	x
Terpsiphone viridis (P)	x	(x)	x	.	x	(x)	.	.	.	(x)	x	x	.	.	v/x
Dryoscopus cubla (P)	x	x	x	x	x	x	x	x	x	x	x	x	x	.	x
Malaconotus multicolor (P)	.	v	(v)	.	x	x	x	x	x	x	x	v	x	.	.
M. olivaceus (M)	.	.	.	x	.	.	.	.	.	.	.	.	x	x	.
Cinnyricinclus leucogaster (P)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x
Anthreptes collaris (P)	x	x	x	.	x	x	x	x	x	x	x	x	x	.	x
Nectarinia mediocris (M)	.	.	.	x	.	.	.	.	.	.	.	.	x	x	.
N. olivacea (P)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Zosterops senegalensis (P)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Ploceus bicolor (P)	x	x	x	.	x	x	x	x	x	x	x	x	x	.	x
Cryptospiza reichenovii (M)	.	.	.	x	x	.	x	x	.	x	.	.	x	x	.
Hypargos niveoguttatus (P)	.	x	x	.	x	x	x	x	x	x	x	x	x	.	x
Total number of species	30	36	47	32c	46	41	43	36	30	58	42	41	51	32	39
													68		

escarpment. Also in mature miombo and riparian woodland, deciduous forest, 50–2350 m.

Marginal species. Six other raptors are known to nest in rain forest, but they hunt in open country: Hooded Vulture *Neophron monachus*, White-headed Vulture *Trigonoceps occipitalis*, Red-breasted Sparrowhawk *Accipiter rufiventris* (from montane grassland, 1700–2400 m, Appendix. 3), Long-crested Eagle *Lophaetus occipitalis*, Martial Eagle *Polemaetus bellicosus*, Bateleur *Terathopius ecaudatus*.

PHASIANIDAE

Scaly Francolin *Francolinus squamatus*. Pluriregional (GC). Table 2: confined to S Viphya. Ground stratum of forest, also in secondary growth, thick *Pteridium* bracken, and occasionally penetrates pine plantations. Quite common between Chamambo and Kawandama, and on eastern scarp. 1000–1800 m.

Crested Guineafowl *Guttera edouardi*. Pluriregional. Tables 2, 4. Ground stratum, in small groups. Also in riverine forest (Luweya and tributaries near Mzuma) and semi-evergreen thicket (Lower Shire). In small numbers, probably threatened. 50–700 m.

Marginal species. Hildebrandt's Francolin *Francolinus hildebrandti*, of scrub and thicket (to 2200 m) is occasional in dry or secondary forest near edges, 600–1600 m.

RALLIDAE

Buff-spotted Flufftail *Sarothrura elegans*. Pluriregional (GC). Tables 2, 3, 4. Certainly under-recorded: forest distribution entirely based on sound data. Calls more often at night, only in the rains, November–March. Also in (semi-) evergreen and deciduous thickets. 500–1900 m. Subject to some movements—e.g. a bird heard once in a Lilongwe garden in December (MGD) must have been passing.

Marginal species. The Red-tailed Flufftail *Sarothrura affinis* of montane grassland (Appendix. 3) has been heard a few times inside forest, not far from edge (Nyika, 2150 m).

COLUMBIDAE

Two *Columba* pigeons (one highly local) eat whole fruits in the upper strata, and three doves (one rather marginal) take a mixture of seeds and small invertebrates on the ground (see Dowsett-Lemaire 1988b).

Rameron Pigeon *Columba arquatrix*. Montane endemic. Tables 2, 3, 4. Densities vary according to distribution of favourite fruit trees (especially *Afrocrania volkensii*, *Olea capensis*, *Polyscias fulva*, also *Schefflera umbellifera* on Mulanje). Important breeding sites (with a few hundred pairs) are the Nyika Plateau, Malosa–Zomba (at least in 'olive years' as in 1983) and Mulanje Mts, with highest densities on SW Nyika (2100–2200 m)

Notes to Table 4, pp. 22–23

[a] Zomba Mt includes adjacent Malosa Mt with identical avifauna; secondary submontane forest on Chiradzulu Mt has only two species not found lower down at Lisau (*Elminia albonotata*, *Nectarinia mediocris*); forest at Mpingwe and Namzadi (Nansadi) mentioned by Benson (1948) no longer exists.

[b] Likely to be under-recorded.

[c] Riverine forest at foothills (1050–1400 m) has several species not found on plateau, e.g. *Stactolaema leucotis*, *Dicrurus ludwigii*, *Andropadus virens*, *Apalis chariessa*, *Platysteira peltata*, *Ploceus bicolor*

of 1–3 pairs/3 ha. Breeding pairs there and elsewhere are outnumbered by non-breeders. Unlike breeding birds which roost in their nesting patches, non-breeders on the Nyika roost communally, at two traditional sites 16 km apart (Chowo Forest in Zambia, *Pinus* plantation on central plateau): they undertake daily feeding movements of up to 20 km.

Numbers in the breeding season (September–November) lowest in Mugesse Forest, Misuku (two song-posts in 200 ha in 1982) and central Malawi. On the Nyika, small patches where *Olea capensis* provides the main fruit source are occupied by territorial pigeons only in olive years (i.e. every other year), although these birds feed also in other forest patches. The species is of irregular occurrence at Ntchisi and Dzalanyama where there is little suitable food other than olives and it is not (yet) recorded from Mangochi Mt (no fruiting *Olea* in our 1983 visit).

1500–2300 m. Largely a breeding migrant; some stay and wander locally after the nesting season. A few birds roosting in Uzumara (N Viphya) in June were seen to fly in from Chimaliro, 20 km distant. On the Nyika and elsewhere numbers drop sharply during December, with only a few birds or small flocks left in January–May. Wanderers noted in some mid-altitude forests of the Shire Highlands, and in lowland forest only in Malawi Hills in December to May (Long 1961) and foot of Mulanje Mt at *c.* 800 m with one bird collected from a flock in early August (Benson 1940), but altitudinal movements down Mulanje not recorded in recent decades. On the Nyika, some dozen birds return in June in *Chionanthus* fruiting years (and the presence of 40 birds on Ndirande in May (NJS) may be similarly explained), otherwise in August when territorial settlements take place (with Afrocrania fruits starting to ripen). In the north at least, I believe over 90 per cent of birds leave the country in December, presumably moving north.

Bronze-naped Pigeon *Columba delegorguei.* Pluriregional (GC, as considered conspecific with *C. iriditorques*: Dowsett & Dowsett-Lemaire 1980). Table 4: confined to Thyolo Mt. Unaccountably rare: no more than one bird seen and another singing in *c.* 500 ha (November 1983); maximum of two birds heard by Johnston-Stewart (1982) in January–February. 1200–1450 m.

Blue-spotted Wood Dove *Turtur afer.* Pluriregional. Table 2. Not normally in rain forest, except on the Lake-shore, 500–700 m. Usually in riverine vegetation and moist woodland.

Tambourine Dove *Turtur tympanistria.* Pluriregional (GC). Tables 2, 3, 4. Widespread evergreen thicket (Lower Shire). In small numbers, probably threatened. 50–700 m.

Cinnamon Dove *Aplopelia larvata.* Montane near-endemic. Tables 2, 3, 4. Widespread, but not known to nest in forest patches without a stream. Territories of 2–4 ha/pair on SW Nyika (2000–2200 m) and 2–6 ha/pair on Viphya Plateaux (1600–2000 m). 1050–2300 m, but below 2100 m south of 14°S. Largely resident, with some altitudinal movements to 600–900 m: individuals noted or collected in lowland forest or evergreen thicket at six localities from N Lake-shore (Benson 1940) to Malawi Hills (Long 1967, NJS), including the foot of Mulanje Mt (NJS, pers. obs.), mostly April to August, with one record February and October. Presence in Malawi Hills in December (Long 1967, on sound only) requires confirmation. These movements cover distances of up to 80 km from the nearest breeding sites.

Marginal species. The Pink-breasted Turtle Dove *Streptopelia lugens*, of montane grassland and scrub (1700–2400 m, Appendix. 3), occasionally flies into edge of forest. The Red-eyed Dove *S. semitorquata* is rare on forest edges at low and medium altitudes. Green Pigeons *Treron australis* are regular post-breeding visitors to submontane forest

(1600–2200 m in the north), small flocks feeding on *Syzygium* and other fruits (Dowsett-Lemaire 1988b) from November or December to March.

PSITTACIDAE
No true forest species, but the Brown-necked Parrot *Poicephalus robustus* from savanna is a regular post-breeding visitor to submontane forest (S Viphya, Nyika to 2150 m, perhaps Ntchisi) to feed on ripe seeds of *Parinari* etc. (Dowsett-Lemaire 1988b), from November to February.

MUSOPHAGIDAE
Three *Tauraco* species take a great variety of fruits, mostly in canopy and mid-stratum (Dowsett-Lemaire 1988b), and occasionally other vegetable matter. The two green *Tauraco* (*livingstonii*, *schalowi*) are completely allopatric, and *T. porphyreolophus* is largely segregated from either by altitude and habitat, or keeps separate territories.

Purple-crested Turaco ***Tauraco porphyreolophus.*** Eastern endemic. Tables 2, 3, 4. Common in lowland forest. Also in semi-evergreen thicket, deciduous forest, riparian and miombo woodland. 50–1600 m, but absent from mid-altitude rain forest occupied by the other species.

Schalow's Turaco ***Tauraco schalowi.*** Pluriregional. Tables 2, 3. Common, with for example 40 pairs in 160 ha on SW Nyika (2100–2200 m). Also in riparian forest and miombo woodland. 1000–2300 m, locally down to 600 m. In rain forest, this and previous species largely replace each other, *T. schalowi* at higher altitudes. Where they come into contact, in riverine forest and woodland, they maintain separate territories and react to each other's song.

Livingstone's Turaco ***Tauraco livingstonii.*** Eastern endemic. Table 4. Common, replacing *T. schalowi* east of Rift. The fruit diet identified so far greatly overlaps with that of *T. schalowi* (80 per cent species in common). Also in riparian forest and miombo woodland. 1000–2300 m, down to 600 m at Mulanje.

CUCULIDAE
Four species from different genera, all of localized distribution.

Barred Long-tailed Cuckoo ***Cercococcyx montanus.*** Eastern endemic. Table 2: confined to Lake-shore forests. Niche uncertain, and calling season of Lake-shore birds apparently very restricted (December). Also in deciduous forest and thicket in southern Malawi where status uncertain following habitat clearance. 50–700 m. Perhaps mainly a rainy season visitor, but one bird mist-netted in June in the Lower Shire (Benson & Benson 1977: 253).

Emerald Cuckoo ***Chrysococcyx cupreus.*** Pluriregional (GC). Tables 3, 4. Local in forest canopy, mostly at medium altitudes. Also in deciduous forest, semi-evergreen thicket and miombo woodland. 50–1700 m.

Green Coucal ***Ceuthmochares aereus.*** Pluriregional (GC). Tables 2, 4. In dense understorey, edges and mid-stratum where leafy tangles of lianes. Local, common only in Lake-shore forests. Also in (semi-) evergreen thicket. 50–1300 m.

White-browed Coucal ***Centropus superciliosus.*** Pluriregional. Table 2. Not normally in rain forest except in thick understorey of Lake-shore forests, 500–700 m. In any thicket, secondary growth (to 2200 m), reedbeds, gardens.

Marginal species. Red-chested Cuckoos *Cuculus solitarius* from woodland and thicket often call from edges of forest and montane scrub (to 2250 m) and are known to parasitize robins of forest margins *Cossypha caffra* and *C. heuglini* (pers. obs., Benson & Benson 1977). The Klaas's Cuckoo *Chrysococcyx klaas* is of more local occurrence at edges, to 2200 m.

STRIGIDAE

Wood Owl *Strix woodfordii.* Pluriregional (GC). Tables 2, 3, 4. Widespread in all forest types. Defended territory of a pair on Nyika at least 10 ha, but home range nearer 50 ha. Also in thicket, miombo and other woodland. 50–2400 m.

APODIDAE

Scarce Swift *Schoutedenapus myoptilus.* Montane endemic. Tables 2, 4. Feeds essentially over forest canopy; all forest areas where located other than on passage are at least 150 ha in size in the north, over 300 ha in the south, and have a tall canopy (25–40 m). Common and very vocal, with several dozen pairs in Misukus, on Nyika, Mulanje and Thyolo Mts; aerial matings frequently seen from late October to December. The nest of this widespread swift is still undescribed; although it may breed on cliffs locally (suspected for Kenya: Brown & Britton 1980; eastern Zimbabwe: C.J. Vernon and M.P.S. Irwin, *in litt.*), it is likely to breed in forest trees in Malawi, at least in the north. A swift found on the forest floor in Chowo, Zambian Nyika, in January (Scott 1979) was a newly-fledged young, judging from photographs. Cliffs are virtually absent from its breeding range in northern Malawi, and it was never seen near rocky banks of streams.

1600–2350 m north of 14°S, *c.* 1200–2000 m in the south. A breeding migrant. First arrivals 1 September (Nyika) and 3 September (Zomba, on passage); all September records are of birds passing over. Settle from late October or early November and common until March, then suddenly disappear. Latest date 12 April (Nyika). Also wandering over the town of Mzuzu (1300 m) in November and January.

COLIIDAE

Only one marginal species, the Speckled Mousebird *Colius striatus*, from thicket and montane scrub (to 2200 m), which takes fruit from small trees on the edge (Dowsett-Lemaire 1988b).

TROGONIDAE

Two species largely separated by altitude. Both snatch prey (large insects) in short flights off foliage and bark in the understorey.

Narina's Trogon *Apaloderma narina.* Pluriregional (GC). Tables 2, 3, 4. In dense understorey (2–18 m), less easily seen than next species. Often in very small numbers, local, or patchily distributed, but throughout Chikala Forest (1300–1550 m). Only a rare visitor to Thyolo Mt (one recent February record, JDA); overlaps with *A. vittatum* at Ntchisi (1400–1600 m). Also in (semi-) evergreen and deciduous thicket, and transition woodland (i.e. moist miombo with some evergreen understorey). 50–1600 m, below 1000 m on S Mulanje. Subject to local movements, wandering to gardens, plantations and irregular in some forest localities (Kalwe, Thyolo).

Bar-tailed Trogon *Apaloderma vittatum.* Montane endemic. Tables 2, 3, 4. Hunts in mid-stratum (mostly 4–20 m) under fairly closed canopy. Prey (especially caterpillars, moths) is located from horizontal perches, snatched off bark and twigs whatever the angle (even vertical trunks) and taken to another perch to eat. Reaches its highest density (12 pairs in 25 ha) under closed canopy in Chowo Forest, Zambian Nyika (2100–2200 m); often 2–3

pairs/10 ha in other northern forests (Misuku, N Viphya) where canopy is less contiguous. Small numbers in south-central Malawi: only a few pairs on Chirobwe Mt (eastern scarp where there is tall forest), 3 pairs and 1 male in *c.* 250 ha on Thyolo Mt (in 1983, probably no more than a dozen pairs in the whole forest), 1 pair on Soche (150 ha, but forest now degraded), more evenly distributed on Mulanje Mt 1600–2000 m.

1300–2200 m, below 2000 m in the south. Largely resident; some altitudinal and especially inter-montane movements up to 100 km from the nearest established population. Altitudinal, off-season movements are of single birds noted in lowland forest at *c.* 1050 m near Thyolo (NJS), down Mulanje and on the slopes of Zomba Mt at *c.* 1200 m in July–August (Benson & Benson 1975); there is an old specimen from Chiradzulu/Lisau (July). But more wanderers (at least seven) have been found at mid or high elevations (1300–2200 m) in the period late August to December—when territorial activity is most intense among breeding pairs: S Viphya (Chamambo: Benson 1940, JDA in 1981), Mangochi Mt (Dowsett & Hunter 1980), Zomba Mt (pers. obs.), Bangwe (NJS), Malabvi (pers. obs.). On the Nyika individuals often wander to small isolated patches of forest, up to 12 km from the nearest regular site. Mangochi Mt is 100 km from the nearest population (Chirobwe across the Rift) and 150 km from the second nearest (Mulanje). These movements show remarkable exploratory behaviour; all forests visited appear too secondary, with a low canopy, or too small, to encourage settlement.

PHOENICULIDAE

Only marginal: one woodland species, the Scimitarbill *Phoeniculus cyanomelas*, rarely wanders to forest (up to 2200 m, Nyika), feeding in canopy.

BUCEROTIDAE

One small *Tockus*, with a diet of large insects and small vertebrates (e.g. chameleons) and few fruits; two large *Bycanistes* essentially frugivorous, both with a predilection for figs (Dowsett-Lemaire 1988b) and almost allopatric. All three occasionally take flying ants on the wing.

Crowned Hornbill *Tockus alboterminatus*. Pluriregional. Tables 2, 3, 4. Widespread in canopy of tall forest; absent from secondary, low submontane forest in the central highlands (Dedza and Kirk Range). Densities vary from 1 pair/10 ha to 1 in 50 ha in the submontane forests of the north. Also in deciduous forest, miombo and other woodland. 50–2000 m, locally to 2200 m (SW Nyika).

Silvery-cheeked Hornbill *Bycanistes brevis*. Eastern endemic. Tables 2, 3, 4. In canopy and subcanopy, sometimes lower on forest edges and clearings, even coming to the ground there. In large numbers only where figs are plentiful (Misuku, locally foot of Mulanje), with moderate numbers Malawi Hills, very few elsewhere (central highlands). 600–2000 m. The Misuku population (140–200 birds) is migratory, the majority of birds leaving after breeding, for several months from December or January (I. Bampton and Fr. Tréguier have observations over several years). Many records of wanderers in the country (e.g. Benson & Benson 1975), in the north as far as the high Nyika (2200–2300 m) 100 km from Misuku.

Trumpeter Hornbill *Bycanistes bucinator*. Tables 2, 4. In canopy, shyer than previous species. Numerous only where figs abound (Ntchisi, Thyolo Mt); at higher altitudes, pairs are widely scattered (e.g. 3 pairs/110 ha on SW Nyika, 2000 m). The distribution of the two *Bycanistes* overlaps only in the Malawi Hills, and marginally at the foot of Mulanje Mt where *bucinator* is outnumbered by *brevis* and perhaps merely a visitor. Also in deciduous and riparian forest, thicket and miombo woodland. 50–2150 m. Subject to local

wanderings, and at high altitudes may be mainly a breeding migrant—e.g. absent Nyika from March to August, but seen Musisi (1700 m) in June.

CAPITONIDAE

Two *Stactolaema* barbets, only marginally sympatric, and three small *Pogoniulus* tinkerbirds, the two siblings *leucomystax* and *simplex* being allopatric. Both *Stactolaema* are partial to figs; *P. leucomystax* is a mistletoe (Loranthaceae) specialist (Dowsett-Lemaire 1988b); all five also take insects.

White-eared Barbet *Stactolaema leucotis.* Eastern endemic. Table 4. In canopy and mid-stratum of lowland and mid-altitude forests where strangling fig trees (*Ficus lutea*, *F. sansibarica*, *F. thonningii*, etc.) not uncommon. Takes some insects on the wing. Also in riparian forest and woodland with fig trees. 600–1600 m (but not above 800 m on S Mulanje where fig trees become sparse). Some local wandering.

Green Barbet *Stactolaema olivacea.* Eastern endemic. Tables 2, 4. Confined to two forest sites where figs of several species are plentiful. Some pairs hold territories of 10–15 ha in the Misuku Hills, and the total population there could be of the order of 200 pairs (1600–1900 m, less common 1900–2000 m). Common on Thyolo Mt (1170–1450 m), outnumbering *S. leucotis* above 1300 m, but total population below 80 pairs.

Moustached Green Tinkerbird *Pogoniulus leucomystax.* Montane endemic. Tables 2, 3, 4. Widespread, except in southeast (Mulanje only). In all forest strata and edges (wherever mistletoes); insects are also an important part of the diet and are caught mostly by flycatching in gaps of the mid-stratum. Its breeding distribution in upland forest is correlated to the presence of at least 4–6 mistletoe species, i.e. providing berries (almost) all year round. Often quite common, especially where forest is fragmented (1–2 pairs/ha on SW Nyika, with the mistletoe *Englerina inaequilatera* frequent on edges), less so in continuous forest. Very local on the slopes of Mulanje Mt (1400–2000 m), as are its main food plants.

1300–2300 m. Largely resident, with some altitudinal or inter-montane movements of up to 70 km or more. Wanderers noted in May–July: below the Misuku Hills at 1100–1200 m (Benson 1937, 1953a), Rumphi Gorge at 1100 m (Benson 1953a) and the eastern scarp of S Viphya at 1200–1400 m (several, pers. obs.). Individuals also wandering to Chipata Mt (June, Benson 1940), Chimbia in Kirk Range (May, NJS) and as far as Soche Mt (October, JDA).

Yellow-rumped Tinkerbird *Pogoniulus bilineatus.* Pluriregional (GC). Tables 2, 4. Feeds at all levels and on edges; has a more generalized fruit diet than *leucomystax* and is common in the Liwonde (Chikala) Hills and Shire Highlands where the mistletoe flora is poor. Also takes insects by flycatching and foliage gleaning. Overlaps with *leucomystax* on Viphya Plateaux and foot of E Nyika, 1600–2000 m, but absent in central Malawi (Ntchisi to Kirk Range) and the extreme north where coexistence with *leucomystax* is perhaps not possible. Also in riverine forest, semi-evergreen thicket (Lower Shire) and moist transition miombo woodland (E Viphya, where the woodland Yellow-fronted Tinkerbird *P. chrysoconus* is absent). 50–2000 m.

Eastern Green Tinkerbird *Pogoniulus simplex.* Eastern endemic. Table 4. Replaces *leucomystax* east of the Lake where quite numerous. The Mangochi–Namizimu forests are rich in mistletoes; whether this species is as dependent on them as *leucomystax* has not been studied. Also in nearby lowland riparian forest and Lake-shore thicket. 500–1700 m.

INDICATORIDAE

Two forest-woodland species whose distribution is influenced by that of their nest hosts (barbets in one, woodpeckers in the other).

Lesser Honeyguide ***Indicator minor.*** Tables 3, 4. In canopy and mid-stratum, taking insects (on the wing or from foliage) and beeswax. Known to parasitize *Stactolaema leucotis* near Thyolo (NJS) and suspected to do so elsewhere (Ndirande, Chikala) as seen visiting nest holes or attempting to do so and persistently chased by these barbets. Its distribution in forest (restricted to low and mid-altitude forest in the south) almost matches that of this particular host. Surprisingly only one song-post was located in forest (Thyolo Mt). Also in all woodland types and deciduous forest. 50–1500 m, wandering to 2200 m (Nyika, outside forest). Has other hosts in woodland (Benson & Benson 1977).

Scaly-throated Honeyguide ***Indicator variegatus.*** Pluriregional. Tables 2, 3, 4. Canopy and mid-stratum; takes insects by flycatching or sallying to bark and foliage, and beeswax. Once at an ant swarm, pecking prey on trunk that was fleeing above ants. Widespread, but individuals always seem on the move when feeding, and have probably very large home ranges. A soft whistle *fue-fue-fue-...* (emitted by both adults and fledglings: Short *in* Fry *et al.* 1988) is not infrequent, but only three song-posts of males have been located in rain forest (Lisau, two sites on Mulanje) and one in secondary forest (Dzonze), suggesting very wide ranging movements of visiting females to woodland areas. Parasitizes *Dendropicos griseocephalus* in the north (Dowsett-Lemaire 1983b: of 22 woodpecker pairs in *c.* 100 ha of forest patches on SW Nyika, three were parasitized in the same season in neighbouring patches of 1.3, 2.3 and 8 ha, probably the work of the same female honeyguide) and *D. fuscescens* in the south (Johnston-Stewart 1982). Also in miombo woodland, riverine and deciduous forest. 50–2300 m.

Marginal species. The Eastern Least Honeyguide *Indicator meliphilus* is of uncertain status: singles seen twice on the Nyika in two-and-a-half years, also recorded from forest on Mulanje and Thyolo Mts (Benson & Benson 1977).

PICIDAE

Two *Dendropicos* species, allopatric, but each coexists with *Campethera abingoni* which has different feeding techniques and very low densities.

Golden-tailed Woodpecker ***Campethera abingoni.*** Pluriregional. Tables 2, 3, 4. Probes and gleans small insects (often ants) on bark of trunks and branches; does not excavate for food, unlike *Dendropicos*. Its distribution in forest is extremely patchy, although a feeding territory when breeding is *c.* 10–15 ha. Also in miombo woodland and deciduous forest. 50–2200 m.

Olive Woodpecker ***Dendropicos (Mesopicos) griseocephalus.*** Montane near-endemic. Table 2: south to S Viphya. Taps and probes, or excavates large insects (often larvae) from bark, mostly in the upper levels of trunks and on small branches. Prefers soft bark of fast-growing trees (near edges and in gaps) so that its density in an area of very fragmented forest is considerably higher than in large blocks: thus 22 pairs in 100 ha of small patches (0.1–12 ha) on SW Nyika (2150–2200 m, Dowsett-Lemaire 1983a) against 2–3 pairs in forests of 100–150 ha. 1200–2450 m. Basically resident, with wanderers collected in riparian forest on SW slopes of Nyika (*c.* 1200 m) and Rumphi Gorge (1100 m) in August (Benson 1940), some 20 km from nearest occupied submontane forest.

Cardinal Woodpecker ***Dendropicos fuscescens.*** Pluriregional. Tables 3, 4. Feeds on bark like previous species, at all levels from base of trunk to canopy. Apparently excluded

from forest in the north by its congener. Also in all woodland types and deciduous forest. 50–2100 m.

EURYLAIMIDAE

African Broadbill *Smithornis capensis.* Pluriregional (GC). Tables 2, 3, 4. Likely to be under-recorded. Flycatches and sallies to foliage for insects, in dense lower storey and mid-stratum, sometimes in canopy. In northern forests appears commoner below 1500 m, but densities difficult to assess as it is rather elusive, and aerial displays are performed mostly in brief twilight hours; several birds heard in *c.* 20 ha at 1800 m (Misuku). Also in riparian forest, semi-evergreen thicket and moist transition woodland: 50–2050 m, but not above 1500 m south of 14°S.

HIRUNDINIDAE

Only marginal, with the Black Saw-wing *Psalidoprocne pristoptera* (to 2000 m) and White-headed Saw-wing *P. albiceps* (montane, 1200–2300 m, Appendix 3) often feeding along forest edges.

MOTACILLIDAE

Only marginal. The Mountain Wagtail *Motacilla clara* penetrates forest along rocky fast-flowing streams, at least up to 2000 m (Nyika) and 1800 m (Mulanje).

DICRURIDAE

Square-tailed Drongo *Dicrurus ludwigii.* Pluriregional (GC). Table 4. In canopy and dense mid-stratum, flycatching and snatching insects from foliage. At least 1 pair/ha in some places (Thyolo, Mulanje). Also in deciduous forest, and evergreen, riparian thicket (Lower Shire) where hunts much lower. 50–1600 m. Curiously confined to the southeast: forest at low altitudes perhaps not sufficiently well developed in the north.

ORIOLIDAE

Have a mixed insect–fruit diet; only one stenotypic forest species, in the southeast.

Green-headed Oriole *Oriolus chlorocephalus.* Eastern endemic. Table 4. Gleans or snatches from foliage in tall canopy, sometimes flycatches in mid-stratum. In lowland forest near Thyolo (1050 m) territorial pairs occupy from 13 to 25 ha. About 15 pairs were counted on Chikala Hill (mostly 1300–1400 m, none above 1450 m); becomes rare above 1300 m on Thyolo Mt. The total Malawi population was estimated in 1983 at between 55 and 60 pairs. 1000–1450 m. Records on Lisau (40 km from Thyolo, 70 km from Chikala) are of wanderers in the non-breeding season (collected in July 1895, seen in January 1981 by NJS). The status of birds previously noted from Soche Mt (Benson 1948, no months given) was not specified: the altitude at which primary forest remains today (1500 m) appears unsuitable, and it may be too small anyway.

Eastern Black-headed Oriole *Oriolus larvatus.* Pluriregional. Tables 2, 3, 4. In canopy. Status in rain forest unclear: does not breed on the Nyika, but several present and noisy from mid-April to October, which overlaps with the main breeding season in woodland (September-November: Benson & Benson 1977). Recorded in the Shire Highlands in September–October but not December; however, throughout the rains at Ntchisi and in some of the Lake-shore forests. In any woodland and deciduous forest. 50–2000 m, wandering to 2300 m (Nyika).

Marginal species. The African Golden Oriole *Oriolus auratus* (from woodland) is an occasional non-breeding visitor to submontane and mid-altitude forest (on the Nyika, from April to October).

TIMALIIDAE

African Hill Babbler ***Alcippe abyssinica.*** Montane endemic. Tables 2, 4: Mangochi is at southern limit of range. Mostly in mid-stratum thickets (4–16 m) with walls of lianes. Gleans insects, fruits, sometimes hovers; seen once attending an ant swarm, pecking small prey in foliage above ants. Its optimum habitat is best developed under tall but discontinuous canopy, and locally it reaches densities of 4–5 pairs/10 ha (Nyika at 2000 m, Uzumara at 1800 m). Only one bird calling at Namizimu in a patch of 32 ha (Mapalamba Hill), and a few located on Mangochi Mt in October 1983—the suitable habitat seems rather local—where Dowsett & Hunter (1980) found it 'numerous' in October 1972; but the number of birds collected then (11) must have affected this isolated population. 1550–2400 m.

Mountain Illadopsis ***Trichastoma pyrrhopterum.*** Montane endemic. Table 2. In impenetrable shrubby thickets 2–4 m high often lining streams (Acanthaceae *Anisotes*, *Mimulopsis*) or on slopes (*Alchornea*, *Dracaena fragrans*); probes and turns over dead leaves and other vegetation debris for small arthropods, mostly 0.2–2 m above ground, but also on floor and occasionally hopping up to 4 m. Rarely seen, but common at Uzumara where heard in every streambed on the northeast slopes, more scattered on E Nyika, local in the less luxuriant forest of Chimaliro. 1600–2300 m.

CAMPEPHAGIDAE

Black Cuckoo-shrike ***Campephaga flava.*** Pluriregional. Tables 2, 3, 4. Gleans insects in foliage of canopy and edges, or snatches them in short hops or flights from under leaves or against branches. Has a very patchy distribution in rain forest, especially above 1500 m. Does not breed every year on SW Nyika (above 2000 m). Also in miombo and other woodland, and thicket. 50–2150 m, but probably not breeding below 700–900 m; most birds move out of the plateau areas in April–May to September.

Grey Cuckoo-shrike ***Coracina caesia.*** Montane near-endemic. Table 4: unaccountably confined to Thyolo Mt (1170–1450 m) though not uncommon there, especially on edges. Feeds like previous species, also hops and picks insects on branches. Records of isolated birds at two other localities are almost certainly of wanderers: one was collected in April 1944 at Chiradzulu/Lisau by C.W. Benson (specimen in BM), and another in riverine forest on the N scarp of the Malawi Hills in June (at *c.* 650 m, Long 1976, with a possible sight-record again in December) some 80 km from Thyolo and Chiperone Mt in adjacent Mozambique (where reported by Benson 1950).

Marginal species. The White-breasted Cuckoo-shrike *Coracina pectoralis* (from woodland) was seen several times in forest in the Malawi Hills in mixed bird parties in August, but not December.

PYCNONOTIDAE

Eleven taxa, belonging mostly to the genera *Andropadus* (4) and *Phyllastrephus* (5), with a maximum of five locally in submontane forest (Table 2) and six in mid-altitude forest (Table 4), i.e. up to 2–3 *Andropadus* and 3–4 *Phyllastrephus*. Fruit is only incidental in the diet of *Phyllastrephus* (taking mainly small arthropods on bark or forest floor) but much more important in the mixed diet of *Andropadus* spp. (feeding more in foliage, including the canopy). The fruit diet of the best-known species, *A. nigriceps*, is extremely wide (Dowsett-Lemaire 1988b, see under *A. tephrolaemus*); the latter is the only bulbul regularly attending *Dorylus* ant swarms (and see Willis 1983). *Andropadus nigriceps* and *A. masukuensis* are allopatric, so are the two incipient species *Phyllastrephus flavostriatus alfredi* and *P. f. vincenti*.

Eastern Mountain Greenbul ***Andropadus nigriceps.*** Montane endemic. Tables 2, 4. One of the most numerous birds at high altitudes. Feeds at all levels of understorey to canopy, and on edges; gleans from bark and foliage, flycatches, and when attending ant swarms (for prey flushed by the ants) snatches in short flights or hops from low perches, or pounces on the ground. An ant swarm is often followed by 6–7 birds, some trespassing territorial boundaries. Also in montane scrub 2–4 m high. Reaches its highest densities in forest–grassland mosaic with 2–3 pairs/ha (SW Nyika, 2100–2200 m); nearer 1 pair/ha in more continuous forest, or less (1 pair/2 ha on N Viphya where *A. milanjensis* is as common or more so).

1500–2450 m. Largely resident (ringed birds on the Nyika wander up to 2.5 km: Dowsett 1985), with some altitudinal movements. A few come down Mulanje Mt to 700–1000 m in May–August (pers. obs., NJS), also noted at Zomba (1050 m, June: Belcher 1930), and below E Nyika (*c.* 1350 m, July: Benson 1940); a specimen collected by A. Whyte on the N Lake-shore at 500 m (10°04S, June) must have travelled at least 30 km from the nearest mountain (Nyika).

Stripe-cheeked Greenbul ***Andropadus milanjensis.*** Montane endemic. Tables 2, 3, 4. Feeds much like previous species (with considerable overlap in fruit diet: Dowsett-Lemaire 1988b) but less often in lower storey, and is much more skulking. Occasionally attends ant swarms; seen picking insects on ground just outside forest. Overlaps with *A. nigriceps* at submontane levels (mostly 1500–2000 m), but is the only *Andropadus* in the upper strata of mid-altitude forest. Densities vary greatly in different areas, and are often inversely related to numbers of *A. nigriceps*: this may reflect competition, as well as a preference by *A. milanjensis* for wetter and more luxuriant forests. In the north reaches highest densities in the Misuku Hills (where congener absent) and N Viphya, i.e. at least 5 pairs/10 ha. Elsewhere, in smaller numbers than *nigriceps*: rare at Jembya (a few scattered pairs at 1850–1920 m), and spaced out on S Viphya. The only *Andropadus* bulbul in the secondary submontane forests of central Malawi where rather local. Common east of the Rift at medium altitudes (especially 1200–1800 m). Also in riverine forest at Zomba (*c.* 1100 m).

Mostly 1100–2000 m in the north (uncommon to 2250 m on E Nyika) and 1000–2000 m south of 14°S, but below 1850 m on Mulanje. Largely resident, but regular movements down Mulanje to 600–900 m in February–August (pers. obs., NJS). Also recorded in riparian growth at Misuku at *c.* 1400 m in August by Benson (1937), but could reside at that altitude.

Shelley's Greenbul ***Andropadus masukuensis.*** Montane endemic. Table 2: Misuku Hills only. At all levels to canopy, gleaning insects swiftly from bark of trunk and smaller branches, also in leafy tangles of lianes and shrubby ground thickets (*Dracaena*, *Acanthopale*). Fairly common, but densities difficult to assess as song is rather spasmodic and not far-carrying. 1600–2000 m; also recorded in riparian forest at *c.* 1300 m in August (Benson 1937).

Little Greenbul ***Andropadus virens.*** Pluriregional (GC). Tables 2, 4. In dense understorey and ground thickets, where a skulker, but takes fruit occasionally up to the canopy. Densities vary greatly, depending partly on luxuriance of understorey. Quite common in several submontane forests of the north below 1900 m (2–6 pairs/10 ha locally in Misukus and N Viphya), though absent at similar altitudes on E Nyika and parts of S Viphya where forests may be too cold and exposed. Almost absent from submontane forest in the south (Mangochi Mt excepted), local in the drier mid-altitude forests (e.g. Lisau) to very

common in the wetter types (e.g. Thyolo). Very common in Lake-shore lowland forest (with dense and moist understorey), but absent from the Malawi Hills (drier, more open). Also in riparian forest with dense lower storey (mostly in the north). 500–2050 m, but 600–1600 m south of 14°S.

Yellow-bellied Bulbul ***Chlorocichla flaviventris.*** Pluriregional. Tables 2, 3, 4. Local, in rather secondary forest (scrubby, or with thickets as on the Lake-shore). Mostly in deciduous or evergreen thickets, riparian and transition woodland. 50–1700 m.

Grey-olive Bulbul ***Phyllastrephus cerviniventris.*** Pluriregional. Tables 2, 3, 4. Pecks small invertebrates on ground, bark and foliage at low levels (0–4 m) in liane and shrubby tangles, usually near streams (with local exceptions, e.g Chipata Mt where it occupies *Metarungia* ground thickets throughout the forest) and thus very patchily distributed. Moves in big hops, often flicking tail. Also in riparian forest and (semi-) evergreen thickets. 500–1900 m. Possibly competes with *P. placidus* at medium and high altitudes, and niche expansion noted on Chipata Mt may be related to absence of congener.

Yellow-streaked Bulbul ***Phyllastrephus flavostriatus alfredi.*** This well-marked race (Dowsett & Dowsett-Lemaire 1980) is a Montane endemic; the species as a whole is an Eastern endemic. Table 2. Gleans from trunks of trees and lianes, and along branches, mostly in middle and upper strata (above 4 m), occasionally down to 1–2 m high in low thickets. Attracted to bark covered with mossy epiphytes and various vegetation debris, progressing upwards in short hops, with frequent flicks of one or other wing—perhaps to flush prey. Often quite common, with 3–4 pairs/10 ha (Jembya, Musisi, N and S Viphya, larger forests of SW Nyika, 1600–2150 m), more scattered in cool forests of E Nyika.

1400–2300 m. Resident, with some wandering. On Nyika, birds occasionally visit isolated patches up to 10 km from nearest regular site; one bird seen by NDH on Chipata Mt in June must have travelled at least 32 km (from Ntchisi) across woodland. Altitudinal movements suspected at Kawandama (1750–1850 m) as this noisy bird, common in November–December, could not be found in May—but remains fairly numerous at this altitude and higher elsewhere in winter.

Yellow-streaked Bulbul ***Phyllastrephus flavostriatus vincenti.*** Eastern endemic. Table 4. Much the same niche as previous race, although tree trunks in lowland forest (Malawi Hills) and drier types of mid-altitude forest (e.g. Lisau) are often devoid of epiphytic growth. Whether this affects densities should be verified. 600–1600 m. Absent from submontane forest, except for some off-season movements on Mulanje to 1800 m (March–August, NJS).

Placid Bulbul ***Phyllastrephus placidus.*** Montane endemic. Tables 2, 3, 4. Feeds on ground, pecking or turning over leaves, and in low shrubs and thickets, usually below 1–2 m; hops about flicking tail up and down when at rest, and occasionally one wing. Attends ant swarms. In the Misuku Hills (where *P. flavostriatus* is absent) its niche has expanded and birds frequently forage up to 6–7 m, sometimes clambering up trunks and lianes to a height of 16 m. In the north is largely allopatric with *P. flavostriatus*: only really common in the Misuku Hills (especially 1600–1900 m), much the scarcer of the two where they coexist (S Viphya, and only one sighting at Uzumara). South of 14°S appears more strictly terrestrial (rarely seen above 1 m, except on Zomba Mt exploring trunks up to 6–7 m in the absence of *flavostriatus*) and common next to the local form of *flavostriatus* in several mid-altitude forests of the southeast.

1050–2000 m, down to 900 or even 700 m on Mulanje. Resident (e.g. same territory occupied 1980–86 in a small patch on S Viphya) with some local wandering; at

Kawandama (*c.* 1800 m) much more conspicuous in May than in November–December. A specimen collected by A. Whyte at 'Songwe' (Misuku) in July, presumably on the river of that name, may indicate downward movement.

Terrestrial Bulbul *Phyllastrephus terrestris.* Pluriregional. Tables 2, 3, 4. On ground, occasionally hopping up into dense understorey (below 1 m). Not uncommon in some lowland forests (Lake-shore, Malawi Hills), but at higher elevations only in the drier (e.g. Lisau) or more secondary forests (e.g. Dzonze). Also in (semi-) evergreen and deciduous thickets. 50–1750 m (below 800 m on S. Mulanje), exceptionally to 2050 m in June on S Nyika (Nkhonjera, forest edge) perhaps as wanderers.

White-throated Nicator *Nicator gularis.* Pluriregional (GC if conspecific with Western Nicator *N. chloris*, Appendix 1). Tables 2, 4. Ground and dense understorey where very skulking. Highest densities in the Lake-shore forests (500–700 m) and Kaningina Hills (1100–1200 m) with 3–5 pairs/10 ha. Also in thickets (deciduous and evergreen). 50–1400 m, but only below 1200 m in the south (and below 800 m on S Mulanje).

Marginal species. The Common Bulbul *Pycnonotus barbatus* (from woodland, thicket, riparian forest, gardens, etc.) often visits the canopy near edges, at all altitudes to 2300 m, but is not so far known to breed in rain forest. Could do so on Dedza Mt, where it is quite common in scrubby forest on the top, and no other arboreal bulbul is present.

TURDIDAE

Thirteen species of seven genera, with a main diet of small arthropods taken mostly on or near the ground; fruits are also eaten by some *Cossypha*, and *Turdus* spp. (perhaps on a regular basis, Dowsett-Lemaire 1988b). Several follow *Dorylus* ant swarms persistently, especially the two *Alethe*, *Pogonocichla*, *Cossypha anomala* and *C. natalensis* at medium and high altitudes (ants are not very active by day in the warmer lowland forests). *Sheppardia sharpei* does so in an opportunistic manner and *Turdus* spp. show little interest (see also Willis 1985). There is geographical replacement between the two *Alethe*, and altitudinal replacement between *Cossypha anomala* and *C. natalensis*, and between the two *Sheppardia*; *Pogonocichla* seems excluded from medium elevations in the north by *Sheppardia gunningi*. Two *Turdus* often coexist, but all three do so only locally (Thyolo and Mulanje Mts).

Eastern Bearded Scrub Robin *Erythropygia quadrivirgata.* Pluriregional (perhaps conspecific with Central Bearded Scrub Robin *E. barbata*). Tables 2, 4. Ground stratum, under dense understorey. About 1 pair/ha in some Lake-shore forests (Kalwe, part of Nkuwadzi), but much more local elsewhere (e.g. Malawi Hills). Also in deciduous and evergreen thickets. 500–700 m in the north, 50–1300 m south of 14°S (below 800 m on S Mulanje).

Thyolo Alethe *Alethe choloensis.* Montane endemic. Table 4; almost endemic to southeast Malawi (Chapter 10). Feeds usually at ant swarms, catching small arthropods (including spiders) flushed by ants, from ground, logs, low trunks, etc., by pouncing from low perches or hopping and pecking. One specimen obtained by Vincent (1935) on Thyolo had its stomach distended with driver-ants and a few small beetles. Occasionally hunts away from ants, even in the wet season (when ants are most active). Highest densities in moist mid-altitude forest, e.g. 2 pairs/10 ha on Thyolo Mt. The total Malawi population was estimated in 1983 at *c.* 1500 pairs (200 on Thyolo Mt, 1000 m on Mulanje—decreasing with forest clearance). 1200–1900 m, down to 900 m on S Mulanje. Limited altitudinal movements to 700–850 m down Mulanje Mt in March–October (pers.

obs., NJS) though some may stay to breed (one caught in November at 750 m by T. Roberts).

White-chested Alethe ***Alethe fuelleborni.*** Montane endemic. Table 2. Feeds at ant swarms like previous species, but very rarely seen away from ants (hopping on leaf litter) and then only in the dry season, when ants may remain inactive for some weeks. One seen picking small workers on a trunk in quick succession. All breeding territories (Nyika) contain an active nest of ants and vary from 0.5–4 ha in small patches. Overall densities in continuous forest are often 2 pairs/10 ha (SW Nyika, Misuku, N Viphya, 1600–2200 m), with smaller numbers elsewhere.

1600–2400 m. There is a record of an altitudinal migrant (female) to streamside vegetation in the Misukus at *c.* 1380 m (August, Benson 1937), and from ringing data some birds (mostly females) are thought to move out of the Nyika forests in April–September. The sex ratio of adults caught on SW Nyika in October–March varied from 0.5 to 1 female per male (n = 8 to 25 per month). Some colour-ringed females had disappeared in April; in June and September only one definite female was retrapped against six and five males respectively and two unsexed (sexing was done during the breeding season, using cloacal characters: Dowsett 1983). Highly elusive in the dry winter months, the species could easily be overlooked at lower altitudes.

For more details on ecology, vocal behaviour of both species and breeding of *fuelleborni* see Dowsett-Lemaire (1987).

Gunning's Akalat ***Sheppardia gunningi.*** Eastern endemic. Table 2; also in small mid-altitude forests east of Uzumara and near Mzuzu. In dense understorey of shrubs and woody tangles of lianes, usually below 2 m. Picks small prey on ground, logs and low branches by hopping, or dropping from low perches; turns over leaves. Seen once coming to an ant swarm (600 m). Densities of 1–2 pairs/ha in the Lake-shore forests, and 6 pairs in 7.5 ha on Choma Mt (1750 m); somewhat patchily distributed in the more secondary forests of the Viphya scarp. The total Malawi population of the endemic race *bensoni* must be well over 3000 pairs (of which at least 1800 pairs in the 1500 ha of forest left on the Lake-shore). 500–1400 m, with an isolated population on the small Choma Mt at 1750 m, and even at that altitude is completely exclusive of *Pogonocichla stellata* in the breeding season.

Sharpe's Akalat ***Sheppardia sharpei.*** Montane endemic. Table 2. In dense understorey of shrubs and tangles of creepers, usually below 2 m; often attends ant swarms, but also frequently away from ants in impenetrable shrubberies. Pecks small prey on ground, logs and low branches like previous species, but is much swifter in its movements, darting about. Commonest in Uzumara on the northeast slopes (400 ha), with densities of at least 10 pairs/10 ha. More spaced out, but throughout the E Nyika forests; very local on SW Nyika, with 25–30 pairs in a single forest (75 ha, Zambian side) apparently wetter than neighbouring patches at a similar altitude (2000 m). 1600–2300 m. Could have been missed at Musisi if very local, but the understorey is not dense and does not appear very suitable. If the altitude at which the specimen collected by J. McClounie in 1902 is correct (i.e. 1500 m), this record could refer to a wanderer, as there is only riverine forest at that level.

Starred Robin ***Pogonocichla stellata.*** Montane endemic. Tables 2, 3, 4. The most numerous forest robin in all (sub-) montane and some mid-altitude forests. Gleans in foliage, flycatches, drops to the ground, snatches off bark and small branches in short flights, at all levels up to the canopy and on sunny edges. In its winter quarters at low

altitude, seen feeding mainly below 2 m, thus occupying much the same niche as *Sheppardia gunningi*. Birds that remain at high altitude however feed more in the upper strata and few can be mistnetted from March to August. Always attends ant swarms when they pass in or near its territory. Common throughout its range, with 5–10 pairs/10 ha. In winter quarters at Kalwe seven individuals were caught along 200 m of net-lines in five days. Breeding range: 1400–2450 m in the north, 1200–2300 m south of 14°S (down to 1000 m on S Mulanje). Its absence from mid-altitude forest in the north seems related to the presence of *Sheppardia gunningi*, and it must be excluded by that species on Choma Mt (1750 m). Three birds on the S Viphya (1600 m) were tested in October with tapes of *S. gunningi* song and reacted aggressively.

A partial altitudinal migrant: a ringing study undertaken by Dowsett (1982) on SW Nyika (2150–2200 m, 32 ha of forest with *c.* 50 pairs plus non-breeders) showed that females (adults and immatures) departed after breeding; those staying include territorial males and some of the immature males (n = 19 and 7 respectively caught between mid-March and August). The latest adult female was seen on 11 March, attending fledglings. From many observers, first records at low altitudes are in the last week of December or in early January. The species is widespread from January to August in many lowland forests, also in semi-evergreen thickets (e.g. Lower Shire). Still a few seen in September (e.g. foot of Mulanje Mt at 700 m), with one immature in delayed moult caught on 31 October in Lower Shire (50 m, D.B. Hanmer). Distances involved in this migration are of the order of 20–100 km or more; for example 130 km separate the Nyika breeding grounds from the nearest known winter quarters on the Lake-shore, although Nyika birds could also stop in the mid-altitude Kaningina Hills 115 km distant—these were not visited in winter. On the SW Nyika, between 67 and 78 per cent of adult females (n = 59 ringed) returned each year to the same territory (Dowsett 1985).

Olive-flanked Robin ***Cossypha anomala.*** Tables 2, 4. Feeds on the ground, logs and in low shrubs, mostly while hopping, or in hop-runs and short sallies to snatch from bark. A regular attendant at ant swarms. Territories are smaller in dense shrubby growth near streams (down to 0.25 ha, Nyika) than in semi-open understorey with treelets away from water (near 1 ha). Overall densities of 10 pairs/10 ha on SW Nyika and Uzumara, slightly less elsewhere. Its absence from the Misuku and Musisi forests is unexplained in ecological terms. 1600–2450 m in the north; 1000–2300 m on Mulanje Mt, marginally down to 900 m in January–August (NJS, Benson & Benson 1977).

Heuglin's Robin ***Cossypha heuglini.*** Pluriregional. Tables 2, 3, 4. Mainly ground stratum, in dense understorey. Local in rain forest, and usually near a stream. Also in any thicket, riparian vegetation and gardens. 50–1900 m, exceptionally to 2050 m in dry *Euphorbia obovalifolia* forest on S Nyika (Nkhonjera).

Red-capped Robin ***Cossypha natalensis.*** Pluriregional. Tables 2, 3, 4. Hops on ground and logs, and at ant swarms sallies to prey from rocks or low trunks. In very dense to semi-open understorey, rather skulking. The ecological counterpart of *C. anomala* at lower altitudes. Most numerous in Lake-shore forests, with 1–2 pairs/ha. Also in evergreen and deciduous thickets. 50–1750 m, highly local above 1500 m (Choma Mt in the north, Mangochi Mt in the south). Resident at some places such as the Lake-shore (from observations and ringing data) but status at medium elevations unknown (it is largely a migrant in neighbouring countries: Britton 1971).

Spot-throat ***Modulatrix stictigula.*** Montane endemic. Table 2: confined to two of three forests in the Misuku Hills (absent from Mugesse, 1600–1880 m, and not below 1750 m

at Wilindi). Difficult to see, hops on ground in very dense shrubbery. At 1800–1900 m about one singing bird per ha—much more vocal in late rains, February–March, than October. 1750–2000 m.

Spotted Thrush ***Turdus fischeri.*** Montane near-endemic. Table 4. Forages in leaf litter on ground and rocks, sometimes making quite a noise when turning and throwing dry leaves around, but on the whole very elusive; the song was heard only in September. Discovered for the first time on Mulanje (Chisongeli on the southeast) and Lisau in September 1983, but could have been missed from other apparently suitable localities visited later (e.g. Chikala). Total numbers in Malawi must be very low: thus a maximum of two pairs and another singer encountered in a day visit to Soche (150 ha); one pair and a singer in a similar area at Lisau. 1200–1700 m. There are some off-season records on Thyolo Mt (March and July, NJS), and one was seen in August on Soche (MGD), but a recent sighting of two birds in August at the foot of Mulanje Mt at 700 m (NJS and T. Roberts) indicates some altitudinal movements.

Orange Thrush ***Turdus gurneyi.*** Montane endemic. Tables 2, 3, 4. Pecks in leaf litter and on mossy logs, and takes fruits in the understorey; quickly moves off, and elusive overall. Only one brief sighting near ants by Willis (1985). Generally common in tall and moist forest, with 2–5 pairs/10 ha. On SW Nyika it drops out above 2150 m where the forest becomes more fragmented (and drier), and its density over the gradient is inversely related to that of *T. olivaceus*; but ascends to 2350 m on the wetter eastern scarp where the forest is continuous. On the S Viphya, small patches on the drier central plateau (1700–1800 m) are largely left to its congener. In central Malawi however, where *T. olivaceus* is practically absent, it occupies short scrubby forest as on the top of Dedza and Dzonze Mts (common) and even very small patches (2.5 ha on Mlunduni Mt). Occurs in mid-altitude forest only east of the Rift; especially numerous on Thyolo and Mulanje Mts, to local in drier types (e.g. Lisau).

1450–2350 m in the north, 1200–2200 m south of 14°S (to 1050 m on S Mulanje). Mainly resident, with some altitudinal movements: one specimen was collected at 700 m *c.* 30 km east of Misuku Hills (Igembe Hill, Benson & Benson 1949) in July; several recorded at 1000–1200 m in lowland or riverine forest at foot of Zomba Mt (Belcher 1930), near Thyolo and on Machemba Hill near Mulanje (NJS) in June to August.

Olive Thrush ***Turdus olivaceus.*** Montane near-endemic. Tables 2, 3, 4. Hops in leaf litter, turning leaves over vigorously; occasionally picks insects on large horizontal or oblique branches; takes fruits directly from canopy, less often on the ground. At dusk comes to forest edges. Attends ant swarms rather infrequently. Seems to prefer drier types of forest than *T. gurneyi* and is rare wherever congener is common: thus only one or two pairs or singers recorded at Misuku, Musisi, Uzumara, Chimaliro, Chamambo, Kawandama in the north, and at Thyolo and Zomba in the south, with a few pairs scattered on upper Mulanje. Common only on S Viphya (forest patches of central plateau, 1700–1800 m) and Nyika where the forest is very fragmented (SW and central plateau 2100–2450 m); does breed in patches as small as 0.5 ha, but no more than two pairs occupy patches of 6–12 ha.

1700–2450 m in the north, 1400–2200 m south of 14°S; with only two records of individuals at lower altitudes in August, both at Mulanje (*c.* 1050 m, Benson & Benson 1977; 750 m, NJS).

Marginal species. The Cape Robin *Cossypha caffra* (1200–2800 m, Appendix 3) is widespread in montane scrub and at forest edges; on the high Nyika (above 2150 m) it penetrates small patches of 0.2–3 ha where it keeps separate territories from *C. anomala.*

The Kurrichane Thrush *Turdus libonyanus* (from woodland) was found at the forest-woodland (or plantation) ecotone locally to 1650 m (Nthungwa, Dzonze, Ndirande).

SYLVIIDAE

Ten insectivorous species from five genera, six in the genus *Apalis*. Two (*Bradypterus*, *Camaroptera*) live close to the ground, while the foliage-gleaning apalises, *Chloropeta* and *Phylloscopus* occupy various levels to the canopy. A maximum of three *Apalis* spp. coexist locally; there is some geographical replacement between canopy species (*chapini* and *cinerea* in the north are replaced by *chariessa* and *melanocephala* in the southeast) as well as vertical, altitudinal and horizontal segregation in the trio *chapini–cinerea–thoracica*; *thoracica* and *flavida*, both understorey and edge species, marginally overlap at medium altitudes. *A. chariessa* has the most specialized canopy niche with lower densities than sympatric *melanocephala*. *Bradypterus*, *Chloropeta* and *Apalis thoracica* may follow ant swarms for short periods (see also Willis 1986).

Evergreen forest warbler *Bradypterus lopezi*. (incl. *mariae*, see Appendix 1). Montane near-endemic. Tables 2, 3, 4. Gleans from leaves and bark, occasionally the ground, in dense shrubby understorey and creeper tangles in deep shade (mostly 0–2 m); avoids grass. May be patchily distributed, according to density of undergrowth or other factors (not understood). In the north, quite common on the Nyika and several of the Viphya forests (especially Uzumara, Kawandama and central S Viphya) with densities of 3–6 pairs/10 ha at 1700–2300 m; but uncommon Misuku, rare at Ntchisi (stream gully at 1500 m), and local at lower levels—down to 1250 m on E Viphya. Its absence from the Mafinga–Jembya–Musisi forests is not understood. Much more evenly distributed in the south, with low numbers only in the dry forests of Mangochi and Lisau.

1150–2450 m (down to 950 m on S Mulanje). There is some altitudinal movement down Mulanje (to 600–700 m) in the dry season (March–August), and one June record from lowland forest east of Thyolo (Nkhonjeni, *c.* 550 m, NJS).

Mountain Yellow Warbler *Chloropeta similis*. Montane endemic. Table 2: confined to Nyika. Gleans or snatches from foliage in short hops. In tall submontane forest (20–25 m) prefers edges and mid-stratum thickets in clearings. In low-canopy (8–15 m) montane forest (above 2250 m) feeds at all levels to the tree tops, and very common (1–2 pairs/ha). Also in forest regrowth 1–4 m high. 1950–2450 m.

Yellow-throated Warbler *Phylloscopus ruficapilla*. Montane endemic. Tables 2, 4. Gleans from foliage, sometimes hovers, mostly in middle and upper strata (8–30 m), occasionally lower. Quite common in some submontane forests (Ntchisi, Misuku: up to 10 singing males/10 ha), less so in the drier, more secondary types (e.g. Mangochi) and locally absent (S Viphya, central Malawi). Only in the moister types of mid-altitude forest in the south. Status unclear on Bangwe, may have become extinct through forest clearance (recorded in 1981, not 1983).

1400–2350 m in the north, 1200–1950 m south of 14°S (down to 900 m on S Mulanje), with some altitudinal and inter-montane movements. A wanderer (singing) at 1200 m on the E Viphya, below Chamambo, on 25 September 1982 (pers. obs.) was 80 km from the nearest population (Chimaliro). Wanders down to 600–700 m at the foot of Mulanje in January–September (pers. obs., NJS), and to lowland forest near Thyolo (1000–1100 m) in February–August (NJS).

White-winged Apalis *Apalis chariessa*. Eastern endemic. Table 4: confined to the southeast, in some lowland and all mid-altitude forests. Gleans from leaves and twigs in the canopy and at edges, with a preference for light-foliaged, wide-spreading crowns

(especially *Albizia* spp.). Densities are highest in the relatively dry mid-altitude *Albizia*-dominated forest of Lisau (15–18 pairs in 150 ha) but lowest in the wet *Newtonia* forest of Mulanje (two isolated pairs only in 1983–84, at 1000 and 1300 m) and Chikala. On Thyolo Mt, noted mostly on the lower slopes below 1300 m, and densities of 6–7 pairs/100 ha in the lowland *Albizia–Khaya* forests of the nearby tea estates (1000–1100 m). In the Blantyre Hills more noticeable in secondary forest on the slopes than in mature forest (as on top of Soche). Also in riverine forest at Zomba (1000–1100 m), and at Khonjeni (500–600 m, SE scarp of the Shire Plateau).

500–1550 m. The total Malawi population cannot be much above 100 pairs. Thus one of the most threatened forest birds of eastern Africa, as known from only one locality in coastal Kenya (where perhaps extinct), two forest areas in Tanzania (numbers uncertain) and the small Chiperone Mt in adjacent N Mozambique (Collar & Stuart 1985).

Resident, but the record of a singing male (seen by NJS) on 9 December 1981 at Dzonze, Kirk Range, in a 12-ha patch of *Albizia–Khaya* forest (1450 m), represents a remarkable example of exploratory movement, across the Rift Valley and 80 km WNW of the nearest regular site (Zomba). We could not trace this individual in a later visit (1983). The forest structure and composition at Dzonze is very similar to that on the Thyolo tea estates where the species breeds, but far too little forest remains in the Kirk Range for a population to become established.

The song (so far undescribed) is a lively, piping duet of four notes repeated in quick succession (at the rate of 6–7 notes/s): *tee-lu dee-lu tee-lu dee-lu*..., or more rarely the male utters his two notes *tee-lu*, ..., *tee-lu* leaving a gap for the female part. Some caution is needed to distinguish these from the 3-note motifs delivered in much the same pitch and tempo by sympatric *A. melanocephala* (Dowsett-Lemaire 1986).

Black-headed Apalis *Apalis melanocephala*. Table 4. Feeds like *A. chariessa* but also frequently in mid-stratum, occasionally lower (as in tangles of creepers). Quite common throughout its range in lowland to submontane forests. Up to one pair or family group per ha (S Mulanje at 1000 m, Thyolo 1000–1400 m). Also in riverine forest at Zomba. 800 m (perhaps to 600 m along the Ruo River) to 1900 m; absent from the Mulanje plateaux except as a wanderer (2200 m, NJS).

Chestnut-headed Apalis *Apalis chapini*. Montane endemic. Tables 2, 3. In canopy; also on sunny forest edges (down to 2–3 m) and clearings where competes with A. thoracica. Pairs occupy small patches of 0.5–1 ha on SW Nyika but overall densities of 3 pairs/10 ha in more continuous forest (2000–2200 m). Similarly common in several other tall submontane forests in the north (especially N and S Viphya, 1600–2000 m), but local with very small numbers in the secondary forests of central Malawi. Has bred on Chongoni Mt (Benson 1937) but not located in 1983; several on Chirobwe Mt (at the southern limit of its range) even in low canopy (15 m) on ridge at 2000 m. Though it is to a large extent vertically segregated from *A. thoracica*, countersinging between the two species is extremely frequent and has been noted in all of the many localities of sympatry in northern and central Malawi.

In NW Malawi, competes for the forest canopy also with *A. cinerea* which it dominates or excludes only above certain altitudes. There is altitudinal segregation in the Misuku Hills, with *chapini* above *c.* 1700 m. In the broken forests of the Mafinga Mts (1600–1800 m) *chapini* is clearly outnumbered by *cinerea*; at Jembya (1850–1920 m) and Musisi (1700–1800 m) they occur side by side, frequently countersinging. On SW Nyika, they overlap at 1950–2150 m, with *chapini* dominant above 2050 m; at 2000 m, some pairs keep separate territories, countersing and chase each other. It is significant that at Misuku,

Mafinga and Musisi *chapini* is not found much below 1700 m, whereas it descends to 1100 m in the Kaningina Hills and to 1170 m on the E Viphya where *cinerea* does not occur.

1100–2300 m north of 14°S, 1550–2000 m in central Malawi. Largely resident, with some altitudinal movements: thus one pair and two males singing in Mzuma Forest (lakeshore) at 600 m in June, 20 km east of the nearest population on the scarp of the S. Viphya. The very small numbers found in some isolated forests suggest inter-montane movements: e.g. one pair on Choma Mt (7.5 ha), 4 km from the nearest other patch; one pair and one or two males on Chipata Mt (44 ha), 32 km from Ntchisi.

Grey Apalis *Apalis cinerea.* Montane near-endemic. Table 2. In canopy and upper mid-stratum, and on edges; also in lower storeys where *A. thoracica* is absent (Musisi, Jembya, Mafinga) and in forest regrowth a few meters high in the Misukus. On SW Nyika occupies small patches of 0.5 ha at 1925 m (where *chapini* is excluded), with densities of *c.* 3 pairs/10 ha at *c.* 2000 m (with some territories defended against *chapini*); becomes rare above 2070 m. Countersinging with *chapini* was noted at Nyika, Jembya and Musisi (1700–2050 m). In the Misuku Hills is almost totally excluded from forest by its congeners: in Mugesse Forest (where *thoracica* is absent, 1600–1880 m) *cinerea* occurs below 1700 m in all forest strata and in secondary growth; in Wilindi–Matipa (where *thoracica* is present) confined to secondary growth below and (locally) along the forest edges. But clearly outnumbers *chapini* in the Mafinga Mts (1600–1800 m). 1450 m (riparian forest foot of Mafinga Mts and in Misukus) to 2150 m.

Bar-throated Apalis *Apalis thoracica.* Montane near-endemic. Tables 2, 3, 4. In understorey and mid-stratum of tall forest, up to 16–18 m; but occupies all levels in short scrubby montane forest (8–15 m tall) as on high Nyika, above *c.* 2250 m, and Dedza and Mulanje Mts (above *c.* 2000 m) where it is the only *Apalis* warbler present. Partial to edges, also in adjacent secondary growth 3–4 m high. Countersings frequently with the canopy/edge species *A. chapini* in all areas of overlap, but it is not clear how competition affects densities—both are very common side by side over most of their sympatric range of 1550–2300 m. Competes more clearly with *A. cinerea* (which descends to the lower storeys) and both are largely allopatric (Table 2), with horizontal segregation in the Misuku Hills (see above); only on SW Nyika do they coexist, between 1950–2150 m, with *cinerea* remaining in canopy.

Densities and altitudinal distribution vary with race. *A. t. murina* (Misuku Hills, also Tanzania) is widespread, though not numerous, in Wilindi–Matipa but absent from Mugesse forest 8 km distant. There are no records from the Mafinfa Mts apart from a single specimen collected in 1937 (Benson 1940: 622); this noisy bird was certainly absent from all larger forest patches examined in December 1982 and October 1986 (i.e. 132 ha, over half the total forest area). Its absence also from neighbouring Jembya and Musisi, as well as Mugesse, may be related to competition with *A. cinerea* (see above). 1700–2050 m.

Race *youngi* (Nyika, N and S Viphya) is numerous throughout, with densities of *c.* 10 pairs/5 ha where forest is fairly fragmented (Nyika 2150–2450 m, S Viphya 1600–1800 m). Overall range 1600–2450 m, with some unmated males wandering a few km away into the edge of pine plantations (Nyika) and small pockets of forest in miombo woodland (Viphya).

Race *whitei* (central Malawi, also Zimbabwe). Unlike northern races, this one is thriving also in mid-altitude rain and riparian forests (Dzalanyama to Kirk Range); densities of 8–10 pairs/5 ha on Dedza (2150 m), Mlunduni (at 1800–2000 m) and at

Nsambi (graveyard relict, 1250–1350 m), and over 10 pairs/40 ha of lowland forest at Thambani (1100–1200 m). However, it is probably on the verge of extinction in the Ntchisi area, as absent from Ntchisi Forest itself (for no obvious reason, whole forest explored at different seasons by myself and other observers), and a few birds known only from small patches of drier mid-altitude forest at Chinthembwe Mission (1400 m, a few km from Ntchisi) where the remaining forest is gradually being cleared (NJS and R.D. Medland). 1100–2150 m.

Race *flavigularis* (southeast). Common on Zomba and Malosa Mts (1400–1950 m), and Mulanje Mt (1000–2400 m) with altitudinal movements down the latter to 600–700 m in January–August (some birds seen in pairs, and keeping vocal contact).

Yellow-breasted Apalis ***Apalis flavida.*** Pluriregional. Tables 2, 3, 4. In rather secondary forest types (at any level to canopy), local in mid-altitude rain forest (mostly in tangles under broken canopy, stream gullies and near edges). Also in riparian forest and woodland, evergreen to deciduous thickets, and deciduous forest. 50–1650 m (not above 950 m on S Mulanje). Marginally overlaps with *A. thoracica* in mid-altitude forest (Kirk Range, Zomba slopes), lowland and riparian (Dzalanyama, Thambani), 1100–1650 m.

Bleating Bush Warbler ***Camaroptera brachyura.*** Pluriregional (GC). Tables 2, 3, 4. Pecks tiny prey in foliage of shrubs and herbs, vegetation debris and the ground, usually below 2 m. In submontane forests only in the north and at Namizimu–Mangochi: either very local inside forest (Uzumara, Ntchisi), or within a short distance of the edge (Misuku), but more or less throughout in Jembya–Mafinga–Musisi in the absence of *Bradypterus lopezi*, and in the dry forests of Namizimu–Mangochi (where *B. lopezi* is local). More evenly distributed in mid-altitude and lowland forests. Also in any thicket, woodland (where some rank grass) and gardens. 50–1900 m, below 1750 m south of 14°S.

Marginal species. The Cinnamon Bracken Warbler *Bradypterus cinnamomeus* (1300–2800 m, Appendix 3) is common in montane scrub and bracken, and at forest edges, penetrating some small patches on the Nyika above 2150 m, mostly in herbaceous understorey not occupied by *B. lopezi* (for aggressive interactions, see Dowsett-Lemaire 1983d). The Yellow Warbler *Chloropeta natalensis* is also frequent in montane scrub and bracken (to 2300 m, overlapping with *C. similis* on the Nyika), and at forest edges in south-central highlands, even in low scrubby forest locally (Kirk Range). The Brown Parisoma *Parisoma lugens* (1400–1925 m, Appendix 3) is confined to canopy of forest edge *Acacia abyssinica* where these form small groves of secondary forest. Two *Sylvia* warblers are migrants from the Palaearctic, the Garden Warbler *S. borin* common in evergreen forest at all altitudes (to 2300 m) and the Blackcap *S. atricapilla* mostly above 1500 m (to 2250 m); both take fruits in canopy and smaller trees (Dowsett-Lemaire 1988b).

MUSCICAPIDAE

Nine insectivorous species of six genera: *Batis* (3), *Platysteira*, *Elminia* and *Trochocercus* mostly in understorey; *Muscicapa* (2) and *Terpsiphone* in more open situations. The three *Batis* are completely allopatric; there is limited altitudinal overlap between the two *Muscicapa*, and almost complete segregation between *Trochocercus* (lowland) and *Elminia* (montane). *Batis capensis*, *Elminia albonotata* and *Muscicapa adusta* have been seen attending ant swarms on a few occasions.

Dusky Flycatcher ***Muscicapa adusta.*** Pluriregional. Tables 2, 3, 4. On edges of forest and large clearings, or in broken canopy where there is plenty of space to flycatch; also snatches insects off foliage. Quite widespread, but pairs are widely scattered, though territories can be small (1–2 ha). Also in miombo woodland, riparian forest, edge of

plantations. From 750 or 900 m to 2200 m. A partial altitudinal migrant down to 50 m (Lower Shire) in April–August.

Ashy Flycatcher ***Muscicapa caerulescens.*** Pluriregional. Tables 2, 3, 4. Same niche as previous species with very limited overlap at two localities: Thambani (1100–1200 m) and Chipata Mt (1400–1500 m, with *caerulescens* on edges only, *adusta* in canopy). Also in riparian forest and woodland, edge of deciduous to evergreen thickets. 50–1500 m.

Cape Batis ***Batis capensis.*** Montane near-endemic. Tables 2, 3, 4. Widespread, the most common forest flycatcher above *c.* 1400 m. Its absence from Mangochi and Namizimu Mts and Dzalanyama may be due to isolation. At all levels of the understorey, occasionally up to the canopy, and on edges. Snatches prey off branches and under the leaves in a short hop or flight, sometimes in the air within 1–2 m of the perch; also pecks on bark while perched, as when taking small insects fleeing up trunks above ants. Some territories are as small as 0.3 ha on SW Nyika (with much edge habitat) but overall densities in tall forest are of 10 pairs/10 ha in most localities.

From 1150 m (1000 m on S Mulanje) to 2450 m, with altitudinal movements down to 800 m at Mulanje in February–August, some birds seen in pairs. On the Nyika, very few ringed individuals wander after breeding, up to 2.6 km (Dowsett 1985).

Forest Batis ***Batis mixta.*** Eastern endemic. Table 2: confined to Misuku Hills. As for previous species, but not noted in canopy. Widespread in all Misuku forests, 1600–2050 m.

Woodwards' Batis ***Batis fratrum.*** Table 4. In understorey (1–18 m) and at edges. The Malawi Hills forests hold well over 100 pairs, with about 10 pairs/10 ha in the more luxuriant part of the forest along and below the ridge, lower densities elsewhere. Also in semi-evergreen thicket in the Lower Shire (Lengwe, very rare). 50–940 m.

Black-throated Wattle-eye ***Platysteira peltata.*** Tables 2, 3, 4. Snatches insects off foliage, in a hop or short flight, sometimes in mid-air. At all levels up to the canopy, but more skulking and much less vocal than *Batis* spp., so densities are uncertain. Largely separated from *Batis capensis* by altitude, and overlaps marginally at Ntchisi (1350–1400 m, but *Platysteira* rare), Kirk Range (*c.* 1300 m, in graveyard relicts), Chikala (at 1350–1400 m, below that only *Platysteira*), Zomba (slopes, 1400 m), Lisau, and Ndirande (1400–1500 m). Also in riparian forest, (semi-) evergreen thicket, and perhaps wandering into gardens (Nkhata Bay). 50–1600 m (below 900 m on S Mulanje).

White-tailed Crested Flycatcher ***Elminia albonotata.*** Montane endemic. Tables 2, 3, 4. Hops along branches in a zig-zag fashion, fanning tail, and catches insects on the wing in jerky flights close to foliage and bark, or in small gaps of understorey. At all levels, occasionally up to the canopy. Densities of 5–10 pairs/10 ha in several submontane forests in the north (SW Nyika, Misuku, parts of N and S Viphya but not Kawandama—too cold and exposed?—where rare). Not quite so numerous in the south, though not uncommon in some moist mid-altitude forests. Not noted below 1300 m on Thyolo Mt, nor below 1400 m on Malabvi (only on the moist ridge), and absent from Lisau (1300–1450 m, presumably too dry). Its absence from Ntchisi may be due to isolation, but its absence or rarity (if missed) on Musisi Hill (close to Jembya and Nyika) is not understood.

1200–2450 m (down to 1050 m on S Mulanje). Largely resident (on the Nyika a few ringed birds wander up to 2.5 km after breeding: Dowsett 1985), with some altitudinal movements to 600–700 m at Mulanje in January–August (pers. obs., NJS) and recorded at *c.* 1100 m in lowland forest near Thyolo (Johnston-Stewart 1982) and Zomba (Belcher 1930, pers. obs.) in May–September.

Blue-mantled Flycatcher *Trochocercus cyanomelas.* Pluriregional. Tables 2, 3, 4. Much the same feeding techniques as last species, but not as demonstrative and rapid, fanning tail less widely (sometimes not at all); occasionally picks insects from branch as hops along. In thick understorey and liane tangles usually below 8 m; often patchily distributed as confined to denser parts of undergrowth, but quite common in the fairly impenetrable Lake-shore forests (at Kalwe, at least 10 pairs/10 ha). Approaches *Elminia albonotata* on E Viphya (1200–1400 m, but both species are rather local and do not have overlapping territories), and is segregated by altitude elsewhere: thus below 1200 m in the Kaningina Hills (*Elminia* at *c.* 1300 m), on lower slopes of Thyolo Mt below 1250 m (*Elminia* above 1300 m). Also in (semi-) evergreen thicket. 50–1400 m, usually below 1200 m (and below 950 m on S Mulanje).

Paradise Flycatcher *Terpsiphone viridis.* Pluriregional. Tables 2, 3, 4. Flycatches from a perch or snatches prey off the foliage while hovering, occasionally fans tail along branches like an *Elminia*. Often in gaps, on edge of mid-stratum thicket, and very patchily distributed. Also in any woodland, thicket, riparian forest and gardens, where more common than in rain forest—e.g. present on the Lake-shore, but outside forest. 50–2000 m, irregular to 2150 m on SW Nyika (i.e. a few pairs in some years and not others, thus likely to be under-recorded elsewhere in one-season surveys). Largely a breeding migrant at medium and high altitudes—e.g. from late September to March on the Nyika.

Marginal species. The Slaty Flycatcher *Melaenornis chocolatina* is widespread at edges of submontane forest (1600–2200 m, Appendix 3), and may feed a little way inside (to *c.* 50 m from edge) as when following army ants. Two woodland *Batis* may come to forest edges: Chinspot Batis *B. molitor* rarely so, Mozambique Batis *B. soror* in several places. The White-tailed Blue Flycatcher *Elminia albicauda*, found normally at margin of riparian forest, thicket, and dense woodland, was seen in forest interior at two localities where *E. albonotata* is absent: Musisi (1720 m) and Dzalanyama (1550 m), but both in June visits, and the situation in the breeding season remains unknown.

MALACONOTIDAE

Five insectivorous species of three genera—*Malaconotus olivaceus* also takes fruit, and *Laniarius aethiopicus* small vertebrates. Of the two *Laniarius*, *aethiopicus* penetrates forest only locally and where *fuelleborni* is absent. The two *Malaconotus* overlap at one site where they are segregated vertically. *Dryoscopus* is almost throughout below 2000 m but is even more common in woodland.

Southern Puffback *Dryoscopus cubla.* Pluriregional. Tables 2, 3, 4. Gleans from foliage and twigs, mostly in the canopy. Territories of 4–8 ha on SW Nyika (at 2000 m) and S Viphya (1700–1800 m), and similarly common elsewhere. Also in any woodland and thicket. 50–2050 m, with a few pairs to 2200 m on SW Nyika, but not above 1500 m on Mulanje Mt.

Fülleborn's Black Boubou *Laniarius fuelleborni.* Montane endemic. Table 2. Foliage and bark gleaner in dense understorey (up to 16–18 m) of tall forest, also in canopy of low montane forest (8–15 m), at edges and in forest regrowth 3–4 m high; attends ant swarms occasionally without leaving dense vegetation. Some territories of 0.6–1 ha on SW Nyika and S Viphya where forest is very fragmented (i.e. edge habitat important); overall densities in continuous forest of 2–3 pairs/10 ha—except in the Misuku Hills where it is unevenly distributed, i.e. absent from Mugesse, local in Wilindi, not uncommon in Matipa with increasing altitude. 1170–2500 m.

Tropical Boubou *Laniarius aethiopicus.* Pluriregional. Tables 2, 4. In the north, absent from rain forest except on the Lake-shore (thickets in the understorey); throughout the rather secondary (sub)montane forests of central Malawi (not reached by *L. fuelleborni*). Silent birds were occasionally seen feeding in the canopy of some tall forests in the south (Chikala, Soche), where more usually at edges. Also in forest regrowth, any thicket, riverine vegetation and gardens. 50–2200 m (locally to 2300 m on the Nyika, in montane scrub).

Many-coloured Bush Shrike *Malaconotus multicolor.* Pluriregional (GC). Tables 2, 4. A foliage gleaner in the canopy and mid-stratum (especially in leafy tangles of lianes) of fairly tall forest, mostly at medium altitudes. The only submontane forest where a breeding population is established is on SW Nyika, which may be unique in having a dry season (May–October) completely free of mist and drizzle and thus relatively warm. Territories there are of 6–10 ha per pair (2000–2200 m).

1900–2200 m in the north, and 1050–1600 m in the south (but down to 800–900 m on S Mulanje). On the Nyika and at the foot of Mulanje individuals wander a few kilometres to forest patches where they do not breed; there are records of single birds calling in the Misuku Hills (one in Wilindi in October 1982, where a male had been collected in October 1972: Dowsett 1973), on Mangochi Mt (one male collected in June 1936 by C.W. Benson and one singing in October 1983), and Chikala (June–July 1981, NJS), suggesting fairly wide-ranging and perhaps regular movements of 60–100 km or more from breeding centres.

Olive Bush Shrike *Malaconotus olivaceus.* Montane near-endemic. Tables 3, 4. At all levels of the forest and on edges, but in the 30 m-tall *Newtonia* forest on S Mulanje keeps to the understorey, with *M. multicolor* in the canopy (this is the only locality where these two congeners meet). Quite common in some submontane and montane forests (Mulanje, Zomba–Malosa, Dedza area, Kirk Range), even where rather scrubby (Dedza, Dzonze), although absent from secondary submontane forest on Chiradzulu Mt (perhaps too dry). Only locally in mid-altitude forest, in some of the moister types (Mulanje slopes, graveyard relicts of 2–3 ha in the Kirk Range). 1300–2200 m, down to *c.* 1000 m on S Mulanje (Ruo Gorge).

Marginal species. The Grey-headed Bush Shrike *Malaconotus blanchoti*, from woodland, is found locally in light canopy of secondary forest, or at edges, at medium altitudes (e.g. Ntchisi, Dzalanyama, Kirk Range, up to 1600 m).

PRIONOPIDAE

Only marginal. Parties of two woodland species, the White Helmet Shrike *Prionops plumata* and especially the Retz's Red-billed Helmet Shrike *P. retzii*, frequently foraged in canopy of Malawi Hills forest, in August (not December).

STURNIDAE

Only one true forest species, in the north.

Waller's Chestnut-winged Starling *Onychognathus walleri.* Montane endemic. Table 2. Has a mixed insect-fruit diet (Dowsett-Lemaire 1988b), and tree chameleons (*Chamaeleo goetzei*) are also brought occasionally to nestlings. Forages in foliage of canopy, on lichen-covered branches (hopping and pecking), also flycatches from tall trees. Descends into understorey mostly when the canopy is disturbed by wind. Twelve pairs bred in 160 ha of forest on SW Nyika (2150–2200 m) when feeding conditions were good (Dowsett-Lemaire 1983c); even then these birds were outnumbered by non-breeders and

it seems the number of suitable nest-holes is a limiting factor. Is confined to areas of tall submontane forest in excess of 170 ha and with fairly continuous canopy. 1600–2220 m. Resident, with pairs or groups wandering locally to fruit trees (Misuku, 1450 m, in *Trichilia dregeana*) and small patches (Nyika) up to 10 km from nearest breeding site.

Violet-backed Starling ***Cinnyricinclus leucogaster.*** Pluriregional. Tables 2, 3, 4. Highly local in evergreen forest, and numbers vary from year to year. Feeds much like previous species (on insects and fruits in canopy), also at edges and sometimes descending to the ground outside forest. On SW Nyika (2100–2200 m) *c.* 30 pairs occupied nest-holes in 130 ha in 1980, but none bred in 1981 (a few flocks present) when fruiting of several tree species aborted in dry weather. Also in miombo and other woodland, deciduous forest and thicket. 50–2220 m. A breeding migrant, present mostly from September to March–April.

Marginal species. The Red-winged Starling *Onychognathus morio* (rocky hills) and Slender-billed Chestnut-winged Starling *O. tenuirostris* (which breeds on rock faces along montane streams, 1200–2400 m, Appendix 3) occasionally stop over in forest canopy to take fruits (Dowsett-Lemaire 1983c, 1988b).

NECTARINIIDAE

All species have a mixed arthropod-nectar diet. Small insects and spiders are taken by poking and gleaning or hovering in front of foliage and vegetation debris, also by flycatching. Flowers are probed for nectar directly (frontal method) or by piercing the corolla laterally; in two well-studied species (*Nectarinia mediocris*, *N. verticalis*) and probably all forest sunbirds, the nectar diet appears unspecialized, in contrast to that of longer-billed species of montane scrub and *Protea* grassland (Dowsett-Lemaire 1989a). Four *Nectarinia* (one rather local in forest) and one *Anthreptes*; up to three *Nectarinia* coexist in the north, with some vertical and altitudinal segregation—and they differ markedly in their breeding seasons (Chapter 7).

Collared Sunbird ***Anthreptes collaris.*** Pluriregional (GC). Tables 2, 3, 4. Locally in broken canopy and liane tangles, more often on edges. Quite widespread below 1700 or 1800 m (though curiously absent from Lake-shore forests) but never numerous. Also in riparian forest and woodland; and various types of thicket. 50–1900 m, not above 1400 m on Mulanje.

Little Purple-banded Sunbird ***Nectarinia bifasciata.*** Pluriregional. Table 2. Not normally in rain forest, except on the Lake-shore (in canopy), 500–700 m, where perhaps it excludes *Anthreptes collaris*. In riparian forest and various types of thicket (50–1300 m).

Eastern Double-collared Sunbird ***Nectarinia mediocris.*** Montane endemic. Tables 2, 3, 4. One of the most numerous birds of upland forest. In all levels of foliage but more often in canopy and on edges. Territories of 0.2–0.5 ha on SW Nyika in fragmented forest, and at least 2 pairs/ha in continuous forest in most localities. 1300 m (Kirk Range) or 1400 to 2450 m, down to 1100 m on S Mulanje (though absent from other mid-altitude forests in the southeast). Largely resident; a few birds noted at *c.* 1000 m and 700 m respectively at foot of Zomba (June) and Mulanje Mts (January)—Benson & Benson 1977.

Olive Sunbird ***Nectarinia olivacea.*** Pluriregional (GC). Tables 2, 3, 4. Common and practically throughout below 1900 m in the north, and 1800 m south of 14°S. In all strata but more often in understorey than *N. mediocris*. Both share the nectar of many flowers (Acanthaceae shrubs, *Achyrospermum*, *Ipomoea*), often piercing narrow tubes. Unlike other sunbirds, *olivacea* does not seem to have well-defined territories, and precise

densities are unknown. Also in some riparian forests and dense (semi-) evergreen thickets. 500–2000 m (below 1800 m on Mulanje Mt), with few breeding irregularly on SW Nyika at 2050 m and wandering to 2150 m.

Green-headed Sunbird ***Nectarinia verticalis.*** Pluriregional (GC). Table 2. In the upper strata of forest (canopy, tangles in mid-stratum under broken canopy) and on edges. Rather patchily distributed and much less numerous than either *N. mediocris* or *olivacea*. 1400–2100 m, breeding some years at *c.* 2200 m on SW Nyika, but avoids the colder and wetter forests of E Nyika and locally absent from parts of the Viphya Plateaux. Subject to local wandering (Nyika, see above; on S Viphya flies over pine plantations to visit isolated forest patches).

Marginal species. Two sunbirds of montane scrub and grassland (Appendix 3), the Greater Double-collared Sunbird *N. afra* (1900–2500 m) and Bronze Sunbird *N. kilimensis* (1250–2350 m), often visit forest edges for particular flowers, the latter also some canopy trees, but *afra* is repeatedly chased by its sibling *mediocris* (Dowsett-Lemaire 1989a). Two other sunbirds of woodland and scrub, the Miombo Double-collared Sunbird *N. chalybea* and Yellow-bellied Sunbird *N. venusta*, visit more locally some canopy trees for flowers.

ZOSTEROPIDAE

Yellow White-eye ***Zosterops senegalensis.*** Pluriregional. Tables 2, 3, 4. Foliage gleaner at all levels to the canopy and on edges (for insects, spiders, some fruits and nectar). Throughout all forest types, and locally the most numerous species—e.g. 26 breeding adults netted in 3 ha of forest patches on SW Nyika. Also in forest regrowth, riparian vegetation (thicket, forest), miombo woodland and gardens. 50–2200 m, up to 2450 m on Nyika.

PLOCEIDAE

Dark-backed Weaver ***Ploceus bicolor.*** Pluriregional. Tables 3, 4. In mid-stratum and canopy where pecks small invertebrates from bark (on big branches where hops or hangs upside down) and in foliage tangles, probing vegetation debris. Common in lowland and mid-altitude forests, penetrating only locally into submontane forest (below 1700 m). Also in semi-evergreen thicket (Lower Shire). 50–1700 m. Its absence from the north may be due to the rather poor development of the forest canopy at low and medium altitudes.

Marginal species. The Thick-billed Weaver *Amblyospiza albifrons*, a local marshland weaver, is a non-breeding visitor (dry season) to the interior of some mid-altitude forests, up to 1500 m. The Baglafecht Weaver *Ploceus baglafecht* and Bertram's Weaver *P. bertrandi* (1900–2450 m and 1000–2200 m respectively, Appendix 3), mostly insectivorous, are frequent at forest margins and in clumps of trees and scrub. The Spectacled Weaver *P. ocularis* is widespread at edges (often near streams) at all elevations to 2200 m. Several parties of the woodland insectivore Red-headed Weaver *Anaplectes melanotis* foraged in forest canopy in the Malawi Hills in August—not December.

ESTRILDIDAE

Only two small species in the forest interior, somewhat segregated by altitude and ecology. Seed-eaters, partial to Gramineae (also Acanthaceae, Euphorbiaceae, Rosaceae, Urticaceae in the case of *Cryptospiza*: Dowsett-Lemaire 1988b).

Red-faced Crimsonwing ***Cryptospiza reichenovii.*** Montane endemic. Tables 2, 3, 4. In low understorey (usually below 4 m) keeping to dense shrubby thickets and herbaceous tangles, often near streams. Scattered breeding territories of 1–4 ha on SW Nyika

(2150–2200 m), with local wandering in the off-season (up to 3 km for a ringed bird), but fairly elusive, and densities elsewhere uncertain. Drinks frequently; its apparent absence from some submontane forests (Mangochi, Kirk Range) may be due to lack or scarcity of permanent streams. 1500–2300 m north of 14°S (not in montane forest *sensu stricto*), 1200–2200 m in the south (down to 900 m on S. Mulanje).

Red-throated Twinspot *Hypargos niveoguttatus*. Pluriregional. Tables 2, 3, 4. In dense herbaceous understorey in lowland forest, more often near edges at medium altitudes. Overlaps with *Cryptospiza* in Misuku Hills (1600–1800 m), Ntchisi (where latter rare) and in several mid-altitude forests of the southeast where it is to some extent segregated horizontally. Also in deciduous and evergreen thickets. 50–1800 m (below 1000 m on S Mulanje).

Marginal species. The normal habitat of the Green Twinspot *Mandingoa nitidula* is edges of forest and thicket (never seen far in); widespread at 50–1800 m though not throughout, wandering exceptionally to the Zambian Nyika at 2150 m. The Swee Waxbill *Estrilda melanotis* (800–2400 m, Appendix 3) feeds at edges and in montane grassland, sometimes in forest clearings. The Red-backed Mannikin *Lonchura bicolor* visits locally the forest canopy (e.g. Lake-shore) from nearby woodland or thicket. The Magpie Mannikin *L. fringilloides* comes in to take seeds of the irregularly-fruiting bamboo *Oreobambos buchwaldii* (e.g. E Viphya, Ntchisi).

FRINGILLIDAE

Oriole Finch *Linurgus olivaceus*. Montane endemic. Table 2. Takes small seeds from inflorescences in the canopy, liane tangles below canopy gaps, and on edges (e.g. *Geranium*); hops along lichen-covered branches picking tiny fragments (insects?). Appears very uncommon in Misuku Hills and E Nyika, and erratic at Uzumara, since throughout and in full song in November 1982 (several dozen pairs) but apparently absent in June 1983 and November 1986. Also wanders to S Nyika (Nkhonjera, June), *c.* 20 km from eastern forests. 1600–2100 m.

Marginal species. Two montane *Serinus* (Appendix 3), African Citril *S. citrinelloides* (700–2400 m) and Streaky Seed-eater *S. striolatus* (1600–2400 m) from scrub, bracken and riverine growth, are found at times taking seeds on edges, the former in canopy (e.g. *Hagenia*), and the latter low down as well as in narrow riparian forest with dense understorey.

Chapter 7. BREEDING SEASONS

Breeding seasons—as number of clutches started each month—are documented in Table 5 for 64 species (all forest stenotypic birds in Malawi for which we have information, and some of the ecological transgressors). In *Tauraco* spp. and *Muscicapa adusta* most records are from evergreen forest; for *Indicator variegatus*, the woodpeckers *Campethera abingoni* and *Dendropicos fuscescens*, the starling *Cinnyricinclus leucogaster*, *Zosterops senegalensis* and *Hypargos niveoguttatus* only forest data have been taken into account. Sources of records are occupied nests, females caught in laying condition or with an early brood patch, observations of dependent fledglings (the majority of data for robins and flycatchers were obtained in that way and backdated to month of laying), courtship feeding in some flycatchers (indicative of laying in *Elminia*, of laying and incubation in *Batis*), nest-building and freshly completed nests in a few cases (such as the November record for *Coracina caesia*, and October–November ones for *Apalis chariessa*). Of a total

Continued on p. 52

Table 5. *Breeding seasons of forest birds in Malawi (and marginally Zambia on the Nyika Plateau) with number of clutches started each month.*

Family	species	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Totals	Alt. (m) of records
Columbidae	*Columba arquatrix*					2	4	3						9	1800–2200
	Turtur tympanistria		2		1	2	2	4	1	1	1			13	700–2100
	Aplopelia larvata					3	6	8	4	1		1		23	1100–2200
Musophagidae	*Tauraco livingstonii* and *T. schalowi*[a]				1	3	8	3	5					20	1100–2200
Trogonidae	*Apaloderma vittatum*						4	1						5	1800–2200
Capitonidae	*Stactolaema leucotis*					1	4		1					6	1000–1600
	S. olivacea						3	1	1					5	1200–1900
	Pogoniulus bilineatus					1	4	2						7	1200–1800
	P. leucomystax					4	55	19	2	3				83	1400–2200
Indicatoridae	*Indicator variegatus*			1	2	1								4	1000–2200
Picidae	*Campethera abingoni*					2	1							3	700–2200
	Dendropicos fuscescens		1	2	1	1								5	700–2100
	D. griseocephalus			10	18	10								38	1200–2200
Eurylaimidae	*Smithornis capensis*							2	1	3	2			8	100–1500
Dicruridae	*Dicrurus ludwigii*					2	4	2						8	1000–1500
Oriolidae	*Oriolus chlorocephalus*					2	1							3	1000–1400
Campephagidae	*Coracina caesia*					1		1						2	1200–1400
Timaliidae	*Alcippe abyssinica*						5	2						7	1800–2200
	Trichastoma pyrrhopterum					1								1	*c.* 2000
Pycnonotidae	*Andropadus masukuensis*					2	2							4	1600–2000
	A. milanjensis					2	5							7	1400–2000
	A. nigriceps				8	22	25	5						60	1800–2400
	A. virens						4	1						5	1200–1900
	Phyllastrephus cerviniventris	1					2	1					1	5	600–1700
	P. flavostriatus					1	5	8	2	1				17	1200–2200

Table 5 cont.

Family	species	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Totals	Alt. (m) of records
	P. placidus						2	1	3	4				10	1200–1900
	Nicator gularis								1	2				3	600–900
Turdidae	*Alethe choloensis*							1		1				2	1200–1500
	A. fuelleborni						2	19	12	6				39	1600–2200
	Sheppardia gunningi								2					2	600–1200
	S. sharpei						5	3	1					9	1800–2100
	Pogonocichla stellata					6	68	132	66	10				282	1200–2400
	Cossypha anomala						7	23	21	7				58	1600–2400
	C. natalensis							4	2	1				7	600–1500
	Turdus fischeri							1						1	*c.* 1500
	T. gurneyi						8	6	3	5				22	1200–2100
	T. olivaceus					4	15	9	3					31	1800–2200
Sylviidae	*Bradypterus lopezi*					1	4	8	4					17	1600–2200
	Chloropeta similis							1	5	4				10	2100–2400
	Phylloscopus ruficapilla						1							1	*c.* 1700
	Apalis chapini						2	1	2	2				7	1400–2200
	A. chariessa						1	1		1				3	1300–1600
	A. melanocephala						1	3						4	1400–1700
	A. thoracica					3	23	23	6	6	1			62	1600–2400
Muscicapidae	*Muscicapa adusta*					1	4	7	1					13	1300–2200
	Batis capensis					33	57	43	45	9	3			190	1300–2400
	B. fratrum						1	1						2	700–900
	B. mixta					3	3							6	1600–2000
	Platysteira peltata	1		2	1	2		1	1					8	100–1500
	Elminia albonotata				4	20	24	16	2					66	1400–2400
	Trochocercus cyanomelas				1	1	1	1		1				5	100–700

Table 5 cont.

Family	species	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Totals	Alt. (m) of records
Malaconotidae	*Laniarius fuelleborni*					1	1	4	2					8	1600–2200
	Malaconotus multicolor						1	1						2	1200–1500
	M. olivaceus						1							1	?
Sturnidae	*Onychognathus walleri*				2	12	13	3						30	1600–2200
	Cinnyricinclus leucogaster						4							4	2100–2200
Nectariniidae	*Nectarinia mediocris*	2	6	8	18	4	2						1	41	1600–2200
	N. olivacea					1		4	1	2				8	500–2000
	N. verticalis								1	1	2		1	5	2100–2200
Zosteropidae	*Zosterops senegalensis*					7	51	20	3					81	1400–2400
Ploceidae	*Ploceus bicolor*							1	1		1	1		4	500–1600
Estrildidae	*Cryptospiza reichenovii*	1	1	1		1						1	1	6	1300–2200
	Hypargos niveoguttatus	4								1	2	1	2	10	500–1100
Totals		8	9	21	54	141	443	402	222	81	17	4	6	1408	
Percentage		<1	<1	1	4	10	31	29	16	6	1	<1	<1	100	

[a] Records lumped as some of Benson's data, without locality, cannot be attributed to either form.

of 1408 records, 1000 (71 per cent) come from our 3-year Nyika study (1979–82: Dowsett & Dowsett-Lemaire 1984); 123 recent data from throughout the country (114 obtained by myself, nine by other observers); the remainder are from Benson & Benson (1977, and references therein) and were collected over several decades, at various localities.

For most of the 64 species considered in Table 5, breeding cycles last from (6–) 8 to 12 weeks from egg-laying to independence of juveniles (Dowsett-Lemaire 1983a, 1983b, 1983c, 1985a; many unpublished observations, also Maclean 1985). Raptors and hornbills are excluded, as their nesting cycles are considerably longer and months of egg-laying are not known in the majority of cases. In both *Bycanistes* spp. and *Tockus alboterminatus* there is much feeding activity at holes in October and November, indicating egg-laying takes place in the dry season (two *Tockus* broods from Nyika were backdated to August clutches).

Despite the inclusion of data for 32 species that were not in the Nyika sample (either absent there or breeding not documented) and consideration of other localities for those birds already studied on the SW Nyika, the pattern of seasonal variation in egg-laying activity is clear, with a definite peak in October–November (60 per cent of all records) similar to that obtained with the Nyika sample alone (60 per cent for the same months). Overall, 86 per cent of records fall in the period September to December, and 51 of 64 species breed essentially or wholly then—i.e. late dry season when temperatures are rising, and early rains. Exceptions are the two *Dendropicos* woodpeckers and their parasite *Indicator variegatus* (dry season only, probably in relation to the annual cycle of wood-boring insects), the two Estrildidae (late rains or dry season when many herbs are seeding), two of three *Nectarinia* sunbirds, *Smithornis* (mid-rains), and *Chloropeta similis* of short montane forest and edges (late rains). More information is needed for *Nicator*, *Alethe choloensis*, *Ploceus bicolor* and *Platysteira peltata*.

The frugivores *Columba arquatrix* and *Tauraco* spp. breed during the September–November peak of fruit availability (Dowsett-Lemaire 1988b). Turacos still raise young in January–February, at a time when most *C. arquatrix* have left the country. This can be explained by differing fruit preferences: unlike *C. arquatrix*, turacos are very partial to the abundant crops of *Syzygium* spp. which ripen in the rains—one such late brood of *T. schalowi* was raised largely on *Syzygium* and *Rapanea* fruits (S Viphya).

Within the bulbuls, *Andropadus milanjensis* and *nigriceps* (partly frugivorous, and rather generalized insectivores) breed earlier than *Phyllastrephus flavostriatus* and *placidus* (more specialized bark- and ground-feeding insectivores which find more food in the rains). Within the Turdidae, the generalist *Pogonocichla* starts breeding a month before *Alethe fuelleborni* and *Cossypha anomala*—which feed more exclusively on or near the ground and breed once the rains break. Within the warblers, *Bradypterus lopezi* of the ground stratum also breeds in the rains, starting later than foliage-gleaning *Apalis thoracica*. There are interesting differences between the seasons of the three *Nectarinia* species, not apparently related to nectar availability (Dowsett-Lemaire 1989a) but probably to their particular arthropod diets.

Single broods seem to be the rule. The fairly extensive seasons overall in *Pogonocichla* and *Batis capensis* (five months long on the Nyika alone, the *Batis* February records being from elsewhere) might suggest that some pairs attempt to raise a second brood, but this is not proven so far. In *Batis* all post-October clutches of individually-known birds on SW Nyika were replacements, and up to three clutches could be laid by some females after successive failures (Dowsett-Lemaire 1985a). In the Nyika 3-year study, double-broodedness was strongly suspected in three *Pogoniulus leucomystax* in the same season and one second clutch—later abandoned—was laid by an *Onychognathus walleri*.

Benson (1940) once caught a female *Turdus olivaceus* accompanying a juvenile, which was about to relay (December, Nyika). There are no other known examples of double-broodedness in the Malawi forest avifauna. One likely exception is *Nectarinia mediocris*, with a 7-month season on Nyika; its sibling *N. afra* from montane scrub is able to raise two to three broods (Dowsett-Lemaire 1988c). The rather scattered records for the seed-eating *Turtur tympanistria* and *Cryptospiza reichenovii* come from different sites and could be related to geographical variation in food supply.

With the predominance of the Nyika sample, and the fact that Benson did not always publish localities of breeding records, it is difficult to analyse possible geographical variations in breeding seasonality. However, it seems that some species start breeding a little earlier in the south, and this is probably related to the earlier start of the rainy season there. Thus some or all seven October clutches of *Cossypha anomala* are from Mulanje Mt (cf. Belcher 1925) whereas Nyika birds (48 records) do not start laying before November when the rains set in. The earliest laying date for *Phyllastrephus flavostriatus* (September) comes from Thyolo Mt also in the south (Vincent 1935). The only August clutch of a green turaco is of *T. livingstonii* on Mulanje Mt (Benson & Benson 1947). *Turtur tympanistria* may have a more restricted season at high altitudes than elsewhere: three Nyika clutches are from August (one) and September (two); there as well as on the N and S Viphya Plateaux (above 1600 m) the song is heard mainly from mid-August to October.

In *Smithornis capensis*, the November–February laying data are from low altitudes (below 1400 m), but the alarm-behaviour of pairs noted in December (Mafinga Mts), January (Nyika) and February–March (Misuku) indicates reproduction takes place also in the rains in submontane forest, at 1600–2050 m. In the mistletoe specialist *Pogoniulus leucomystax*, laying as late as December is exceptional on the Nyika (two records, in a year when the favourite mistletoe *Englerina inaequilatera* fruited later than usual, until January), and the three January records are from Misuku (two) and Mulanje where the mistletoe floras largely differ. The most abundant Loranthaceae of the central highlands (Dedza to Kirk Range) is *Phragmanthera usuiensis*, fruiting in the late rains, and it is probably significant that no nest with young (easily detected in this noisy species) was found in my November visits there.

Phyllastrephus cerviniventris is the only bulbul with April–May records: the one from May at least is known to come from lowland forest (Lake-shore, Benson 1942) whereas two October clutches are from 1600–1700 m (Mangochi and Mafinga Mts). Finally, the aseasonal June record for *Platysteira peltata* is from the floor of the Lower Shire valley (*c.* 50 m, Benson & Benson 1977: 255).

Some generalities on the seasonality of breeding in tropical forest birds—such as the avoidance of the second, heavier half of the rainy season (Moreau 1950)—have already been examined (Dowsett & Dowsett-Lemaire 1984). In view of the complex and varied feeding requirements of individual species, attempts at further generalizations are of limited value. Comparison within species or genera remain difficult as samples from other African regions are usually very small (e.g. Brown & Britton 1980, Serle 1981). The most important source of data for African forest birds now is the study of Brosset & Erard (1986) in northeast Gabon, although precise monthly samples of occupied nests have not been published for all species. Even near the equator rainfall in the Guineo–Congolian Region is unevenly distributed around the year (White 1983a) and breeding activities of Gabon forest birds are still (overall) remarkably seasonal.

Chapter 8. BIOGEOGRAPHICAL POSITION OF THE MOUNTAINS OF MALAWI

There are some important faunistic differences between regions in Malawi, but before these are examined it is useful to place the country in its African context.

Patterns of distribution within the Afromontane archipelago have been discussed for plants (White 1978, 1981, 1983a, 1983b, Dowsett-Lemaire 1989b), butterflies (Carcasson 1964) and birds (e.g. Moreau 1966, Dowsett 1971, 1986, Dowsett-Lemaire & Dowsett 1989); all of which groups show a high level of endemism in the Region as a whole. Despite the often great distances between mountains, the endemic montane floras and faunas present a remarkable uniformity throughout the Region, i.e. a large proportion of the species are widely distributed. The montane forest avifauna totals some 140 species (Dowsett (1986) lists about 160, but *c.* 20 are not endemics and also occur in lowland forest). Of these, 38, almost a quarter, are present in Malawi.

Based on faunistic similarities, the mountains of Africa have been grouped into seven regional systems independently by Carcasson (1964, butterflies) and Moreau (1966); their boundaries are fairly similar and also approach those defined by phytogeographers (White 1978, Dowsett-Lemaire 1989b). Moreau's northern and southern limits of the Tanzania–Malawi group have been altered by Dowsett (1986), who tentatively placed southeast Malawi and adjacent Mozambique within the Southeastern group (Zimbabwe to South Africa), whereas Stuart & Miller (Ms) would treat that area as a separate, though impoverished group.

Table 6 shows the distribution of the 38 montane forest birds of Malawi within the Afromontane Region. Only four species and one incipient species (*Phyllastrephus flavostriatus alfredi*) are confined to the Tanzania–Malawi group *sensu lato* (including southeast Malawi); eight (21 per cent) are found in all or all but one group, and a total of 13 (34 per cent) are shared with the very isolated Cameroun system. The high proportion of species (in plants, butterflies and birds) shared between the West and East African mountains, some 2000 km apart, have led some biogeographers to postulate the existence of connecting migratory routes in colder or wetter climatic phases along the edges of the Zaïre basin. There is no evidence that the northern route (i.e. northern rim of the basin) has been used in recent times, but relict populations of montane trees (White 1981, 1983b) and birds (e.g. *Aplopelia larvata*, *Bradypterus lopezi*, *Apalis cinerea*) in small forest outliers on the Zaïre–Zambezi watershed and other upland areas in western Africa indicate that a southern migratory route may have been used in the not too distant past. An example is illustrated in Fig. 2 showing the distribution of *Apalis cinerea* in mid-altitude forest away from its montane range. The recent discovery of a small population in northeast Gabon (Bélinga highlands, 1000 m: Brosset & Erard 1986) is of special interest, and one could expect to find more intermediate populations on the many hills of S Cameroun, Gabon and Congo that have yet to be explored. However, the birds of northern Zambia, Angola and Shaba (Katanga) belong to the race *alticola*, not nominate *cinerea* of the Cameroun and E Zaïre mountains, which suggests that the Cameroun mountains were colonized in an earlier phase, and possibly (though not necessarily) along another route.

Fire protection of *Brachystegia* plots in northern Zambia has in 30 years induced colonization by forest lianes and trees (Trapnell 1959) followed by the establishment of forest birds, including *Apalis cinerea* (Madge 1972). In climatic conditions not very different from the present, or when human-induced fires were less frequent, much of the richer miombo woodland of northern Zambia and Shaba could have been evergreen forest.

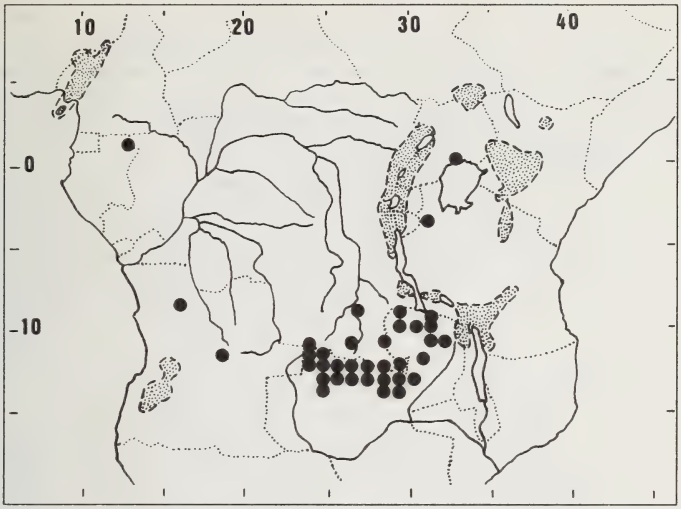

Fig. 1. *Distribution of* Apalis cinerea *showing montane range (shaded) and mid-altitude stations along the 'southern migratory route' (dots). After Stuart (1986) and pers. obs. (Cameroun and Nigeria); Brosset & Erard (1986) (Gabon); Hall (1960), Traylor (1963) and Dean* et al. *(1988) (Angola); the bird atlasses of Zambia and Malawi (in prep.); Schouteden (1971), Vande weghe & Loiselle (1987) (Zaïre, Rwanda–Burundi); Britton (1980) (East Africa).*

The groups most species-rich in montane forest endemics are those of the Albertine Rift (just over 80 species), Kenya (*c.* 60) and Tanzania–Malawi (including the Usambara Mts: *c.* 56), whereas the southeast highlands (of Zimbabwe to South Africa) are considerably impoverished (some 24 species). Of the 38 species found in Malawi, 35 (92 per cent) are shared with mountains to the north, and only 18 (47 per cent) with mountains to the south. Indeed, there is a remarkable dropping-out of species within the latitudes of 9°40–16°30S in Malawi and adjacent northern Mozambique. As many as 20 species (over half the montane forest avifauna) reach their southern, southeastern or southwestern limits of range there (Table 6), against two (*Batis capensis*, *Malaconotus olivaceus*) reaching their northern limits. Locations are the Misuku Hills (for *Andropadus masukuensis*, *Modulatrix stictigula*), Nyika (*Chloropeta similis*, *Apalis cinerea*), N Viphya (*Trichastoma pyrrhopterum*, *Sheppardia sharpei*, *Onychognathus walleri*, *Linurgus olivaceus*), S Viphya (*Laniarius fuelleborni*), Ntchisi Mt (*Phyllastrephus flavostriatus alfredi*), Chirobwe Mt (*Apalis chapini*), Mangochi Mt (*Alcippe abyssinica*), Mulanje Mt (*Pogoniulus leucomystax*, *Andropadus nigriceps*), Thyolo Mt (*Phyllastrephus placidus*) and nearby Chiperone Mt in Mozambique (*Apaloderma vittatum*, *Alethe choloensis*, *Cossypha anomala*, *Bradypterus lopezi*, *Nectarinia mediocris*).

This latitudinal impoverishment is also strongly marked for non-forest montane birds: of 28 species of grassland and forest edges, 15 (54 per cent) drop out through Malawi (Appendix 3). All 28 are present on the Nyika, the largest plateau with over 1000 km^2 of

Continued on p. 57

Table 6. *Montane (near-) endemic bird species occurring in the forests of Malawi, with their distribution in the regional mountain groups of Africa.*

I = Cameroun–Nigeria; II = Angola; III = Ethiopia; IV = Kenya (Imatongs to Kilimanjaro); V = East Zaïre or Albertine Rift (SW Uganda to W Tanzania); VI = Tanzania–Malawi (Usambara to Mulanje and adjacent N Mozambique, a = west of Rift, b = east of Rift and south of 14°S); VII = Southeastern group. '/' indicates species reaching their southern limits within Malawi (or on adjacent Chiperone Mt of Mozambique).

Species	I	II	III	IV	V	VIa	VIb	VII
Buteo oreophilus	.	.	x	x	x	x	.	x
Columba arquatrix	x	x	x	x	x	x	x	x
Aplopelia larvata	x	.	x	x	x	x	x	x
Schoutedenapus myoptilus[a]	x	x	x	x	x	x	x	x
Apaloderma vittatum	x	x	x	x	x	x	x/	.
Pogoniulus leucomystax	.	.	.	x	.	x	x/	.
Dendropicos griseocephalus	.	x	.	x	x	x	.	x
Alcippe abyssinica	x	x	x	x	x	x	x/	.
Trichastoma pyrrhopterum	.	.	.	x	x	x/	.	.
Coracina caesia	x	.	x	x	x	x	x	x
Andropadus masukuensis	.	.	.	x	x	x/	.	.
A. milanjensis	.	.	.	x	.	x	x	x
A. nigriceps	.	.	.	x	x	x	x/	.
Phyllastrephus placidus	.	.	.	x	x	x	x/	.
P. flavostriatus alfredi	.	.	.	.	.	x/	.	.
Alethe choloensis	.	.	.	.	.	.	x/	.
A. fuelleborni	.	.	.	.	.	x	.	x
Sheppardia sharpei	.	.	.	.	.	x/	.	.
Pogonocichla stellata	.	.	.	x	x	x	x	x
Cossypha anomala	.	.	.	x	.	x	x/	.
Modulatrix stictigula	.	.	.	.	.	x/	.	.
Turdus fischeri	.	.	.	x	x	x	x	x
T. gurneyi	x	x	.	x	x	x	x	x
T. olivaceus	.	.	x	x	x	x	x	x
Bradypterus lopezi	x	x	.	x	x	x	x/	.
Chloropeta similis	.	.	.	x	x	x/	.	.
Phylloscopus ruficapilla	.	.	.	x	x	x	x	x
Apalis chapini	.	.	.	.	.	x/	.	.
A. cinerea	x	x	.	x	x	x/	.	.
A. thoracica	.	.	.	x	.	x	x	x
Batis capensis	.	.	.	.	.	x	x	x
Elminia albonotata	.	.	.	x	x	x	x	x
Laniarius fuelleborni	x	.	.	x	x	x/	.	.
Malaconotus olivaceus	.	.	.	.	.	x	x	x
Onychognathus walleri	x	.	.	x	x	x/	.	.
Nectarinia mediocris	.	.	.	x	x	x	x/	.
Cryptospiza reichenovii	x	x	.	x	x	x	x	x
Linurgus olivaceus	x	.	.	x	x	x/	.	.

[a] Not yet confirmed from Cameroun mountains, but recorded on Bioko (Dowsett 1986).

open habitat, but only nine reach Mulanje Mt, where montane grassland and heath scrub (though floristically diverse) cover less than 200 km^2.

Species of lowland forest, by contrast, are far less affected by this latitudinal trend: *Apalis chariessa* reaches Chiperone Mt (from Kenya–Tanzania), and three species of the Guineo–Congolian forest get as far as the S Viphya (*Francolinus squamatus*, *Nectarinia verticalis*) and the Thyolo scarp (*Andropadus virens*). *Batis mixta* attains its southwestern limit in the Misukus (its distribution abutting on that of *B. capensis*) but descends a little further south in Tanzania east of the Lake (to *c.* 11°S).

In many ways—closer affinities with eastern Africa rather than southern, latitudinal impoverishment—the biogeographical position of Malawi's montane forest birds shows great similarities to that of montane trees (Dowsett-Lemaire 1989b) and points to similar evolutionary trends in birds and plants.

Chapter 9. REGIONAL AND ALTITUDINAL VARIATIONS IN NUMBERS AND COMPOSITION OF SPECIES

9.1. Variations between regions (North, Centre, Southeast)

From faunistic and floristic characteristics three forest regions can be recognized in Malawi: in the north (9°40–13°20S, 500–2450 m, some 190 km^2 *in toto*), centre (14°10–15°45S west of Rift, 1100–2150 m, just under 16 km^2), and southeast (14–17°S east of Rift plus the Malawi Hills, 600–2300 m, *c.* 120 km^2). These are inhabited respectively by 86, 56 and 81 bird species (Tables 2, 3, 4 and *Accipiter melanoleucus*), of resident status or breeding migrants.

The forests of the central region are not only very small but structurally impoverished, and the absence of so many species found elsewhere is not surprising—in particular there is no *Alcippe*, no *Alethe* (understorey under broken or short canopy unsuitable for ant-following), no *Phyllastrephus flavostriatus*, only one *Pogoniulus*, one local *Andropadus*, no *Phylloscopus*. However, there is an empty niche for an *Andropadus* bulbul on Dedza and Chongoni Mts: the dense low forest on Dedza appears eminently suitable for *A. nigriceps*, numerous at similar altitudes and higher in fragmented forest on Nyika and Mulanje. Reasons for its absence may be historical (see Chapter 11). A few eurytypic bird species are present in the area in habitats other than rain forest (e.g. *Bycanistes bucinator*, with only *B. brevis* in forest). Of the 56 species, 53 (95 per cent) also occur in the north—the three missing are *Stactolaema leucotis*, *Ploceus bicolor*, and the montane *Malaconotus olivaceus* reaching its northern limit on Chongoni Mt—and 54 (96 per cent) in the southeast—the two missing are *Tauraco schalowi*, and the montane *Apalis chapini* occurring no further south than Chirobwe Mt. In terms of Montane (near-) endemic elements, all but one of 17 are shared with forests to the north or to the southeast.

Of 86 forest species found in the north, five are ecological transgressors only marginally in rain forest (confined to the Lake-shore in that habitat, e.g. *Centropus superciliosus*). If these are excluded, the forest avifaunas of the north and southeast appear equally rich in species, with 63 in common (78 per cent). Differences in species composition seem related to the better structural development and richer flora of forest at submontane levels in the north, and at low and medium elevations in the southeast. Thus the montane component is more important in the first region (34 species) than the other (24, 20 in common), as 11 species reach the southern limit of their range in north-central Malawi and three others skip south-central Malawi to reappear further south (Table 6 above), beyond Zimbabwe. Only four montane birds of the southeast are missing in the

north: the niche of *Malaconotus olivaceus* is, however, filled there by *Laniarius fuelleborni*; *Alethe choloensis* is the vicariant of *A. fuelleborni*; *Turdus fischeri* and *Coracina caesia* are mostly or only in mid-altitude forest.

Several of the montane species confined to the north do not have an ecological counterpart in the southeast—*Buteo*, *Trichastoma*, *Modulatrix*, *Andropadus masukuensis*, *Sheppardia sharpei*, *Onychognathus walleri*, *Linurgus*. *Buteo oreophilus* is restricted to the two largest areas of submontane forest (Misuku, E Nyika) at the southern end of a long chain of mountains in East Africa where it is widely distributed (e.g. Turner 1980). Only Mulanje Mt in the south has forest of comparable size to the Nyika, but it may be too isolated to sustain a viable population. The ecological requirements of the other montane birds just mentioned (tall, fairly continuous canopy for *Onychognathus*, moist, sheltered understorey for most of the others) are not met in the impoverished southern submontane forests. Those montane birds that do have a counterpart in the south are usually replaced there by a lowland form, alethes excepted: *Dendropicos griseocephalus* by *D. fuscescens*, *Phyllastrephus flavostriatus alfredi* by *P. f. vincenti*, *Apalis chapini* and *cinerea* by *A. melanocephala*, *Chloropeta similis* marginally by *C. natalensis*.

The southern forests are richer in lowland elements, in particular Eastern endemics: of 14 species in all, 12 are in the southeast (though *Cercococcyx montanus* apparently not in forest) versus six in the north. A comparison of the forest structure and avifauna at two major sites of lowland rain forest (N Lake-shore, Malawi Hills) is instructive. The most distinctive features of the Lake-shore forests are a very discontinuous canopy dominated by two or three tree species (mainly light-foliaged *Brachystegia*) and a moist, tangled understorey; the fruit assemblage is poor, e.g. there are very few figs, and lianes are dominated by four genera of Apocynaceae with hard, mammal-dispersed fruits. By contrast the forest on the Malawi Hills has a more diverse flora, with 25 species of large trees forming a fairly continuous canopy (none clearly dominant, but several species of fig trees, one common) and a sheltered mid-stratum. Of 36 bird species in the first place and 39 in the other, 27 are shared (mostly raptors and understorey species). The faunistic differences can largely be related to the respective floristic and structural features: the Lake-shore forests have no woodpeckers (large trees too scattered and few in species), no *Stactolaema* barbets (poor fruit supply and few figs) and none of the associated parasitic honeyguides, only one *Bycanistes* (the Malawi Hills can support two), no bark-feeding *Phyllastrephus* nor *Ploceus bicolor*, no *Dicrurus* and no *Batis*. But the dense and moist lower storey has *Andropadus virens* and *Sheppardia gunningi* with no ecological equivalent in the Malawi Hills—*A. virens* occurs in wetter forests elsewhere in the south.

At low and medium elevations in the Shire Highlands and on Mulanje Mt, forests are wetter and more luxuriant than in the Malawi Hills and gain in bird species, including *Columba delegorguei*, *Oriolus chlorocephalus*, *Apalis chariessa* and *Malaconotus multicolor* (all absent from the north except the *Malaconotus* locally in submontane forest). With one main exception, the mid-altitude forests of the north lack a mature, continuous canopy and resultant sheltered understorey. Ntchisi (mid-altitude plus lower submontane) is the only well-developed forest which, from its floristic characteristics, should in theory be able to support some of these absentees—especially a *Stactolaema* barbet since fig trees are numerous. But it is the most isolated forest site in the country (Chapter 2.3) and may still be too small (253 ha).

Also related, it seems, to structural features is the fact that a greater proportion of montane forest birds come down to medium altitudes in the south, e.g. among the genera *Alethe*, *Turdus* and *Phylloscopus* (see below).

9.2. Variations along the altitudinal gradient

In the north the greatest number of bird species is observed in submontane forest at 1600–2000 m (67 overall, plus *Chloropeta similis* appearing near 2000 m) and variations along the altitudinal gradient parallel those in numbers of tree species—i.e. trees 2 m high and above, excluding secondary growth. Numbers of bird species vary as follows: 36 at 500–700 m (Lake-shore, 64 tree species); 44 at 1100–1450 m (Kaningina, E Viphya, Chipata, 92 tree species, with a maximum of 38 birds at 1100–1200 m); 42 at 1350–1640 m (Ntchisi, 94 tree species); 67 at 1600–2000 m (Misuku to S. Viphya, Nyika excepted, 216 tree species); 48 at 2050–2250 m (Nyika, 146 tree species); and only 22 at 2250–2450 m (central Nyika, 57 tree species). There is a linear correlation between number of bird species (y) and that of tree species (x) expressed by the formula $y = 17.3 + 0.23\,x$ ($n = 6$, $r^2 = 88$ per cent, $P < 0.01$).

In the south, bird species numbers are highest at medium elevations (1000–1200 m on Mulanje, 1200–1400 m in the warmer Shire and Liwonde Highlands). On Mulanje Mt, the only massif with a continuum from lowland to montane forest, the number of bird species rises from 41 at 650–900 m (91 tree species) to 51 overall at 900–1400 m (a maximum of 48 birds at 1000–1200 m, 124 tree species on S slopes), then drops to 32 in submontane forest at 1500–1850 m (97 tree species) and gradually to 20 at 2000–2300 m on the high plateaux (floristic diversity uncertain). Elsewhere, bird species numbers are similarly moderate in lowland forest (39 in the Malawi Hills, 600–940 m, 78 tree species; 42 near Thyolo, 1000–1100 m, flora incompletely known) and highest in mid-altitude forest (62 species at 1200–1600 m, Shire and Liwonde (Chikala) Highlands, 128 tree species, with a maximum of 61 birds at 1200–1400 m). Above 1450 m, numbers start dropping, to 32 species on Malosa–Zomba at 1600–1950 m (81 tree species).

Most of the montane elements of southern Malawi reside in the luxuriant mid-altitude forests (i.e. 20 of 24 species) whereas in the north, many of the montane birds drop out below 1400 or 1500 m (leaving only 10 of 34 species at medium elevations); this loss is only partly compensated for by the appearance of new lowland forms, hence the overall impoverishment.

Table 7 shows the variation in the proportion of montane elements with altitude at 21 major localities of forest in northern and southern Malawi. In lowland rain forest, this varies from 0 (below 900 m) to 10 per cent; in mid-altitude forest (*c.* 1100–1500 m, lower on Mulanje) from 21 to 31 per cent; in submontane and montane forests (>1500 m) from 47 to 77 per cent, with a local exception on Mangochi Mt (28 per cent)—a small mountain with presumably a warmer microclimate. In northern Malawi, the avifauna of all submontane forests considered together has exactly 50 per cent montane elements (34 of 68 species), but the figure for individual forests is usually higher (Table 7). This is explained by the fact that montane birds are overall more widely distributed than lowland species; indeed 13 montane species are present in all or all but one or two localities of submontane forest (Table 2, e.g. *Columba arquatrix*, *Pogonocichla stellata*, *Apalis chapini*) versus six lowland birds equally widespread (e.g. *Tauraco schalowi*, *Zosterops*). The overall proportion of montane elements in the submontane forests of the south is slightly less at the same altitude (44 per cent of some 55 species regular above 1600 m): the latitudinal effect, if any, is more than compensated for by the local impoverishment of the montane avifauna.

Size and exposure of mountains also influence the altitudinal range of species: at similar altitudes, the proportion of montane elements is greater on large versus small massifs (Mulanje vs Zomba and central highlands; Thyolo Mt vs Chikala) and on the rain-exposed, cooler side of mountains (E vs SW Nyika). In other words, montane species

Table 7. *Proportion of montane elements in forest avifaunas, varying with increasing altitude.*

Locality	Forest type	Alt. (m)	No. (%) of montane birds	Total No. of species
North of 14°S				
Lake-shore	lowland	500–700	0 (0)	36
Kaningina + E Viphya	mid-altitude	1100–1400	10 (24)	41
Ntchisi	mid-altitude + submontane	1350–1640	14 (33)	42
Chamambo	submontane	1600–1800	21 (60)	35
Uzumara	submontane	1600–1920	29 (63)	46
Misuku	submontane	1600–2050	26 (51)	51
Chimaliro	submontane	1850–2000	25 (64)	39
SW Nyika	submontane	1920–2220	26 (57)	46
E Nyika	submontane	1750–2350	30 (73)	41
C Nyika	montane	2250–2450	17 (77)	22
South of 14°S				
Malawi Hills	lowland	600–940	0 (0)	39
Near Thyolo	lowland	1000–1100	4 (10)	42
S Mulanje	mid-altitude	900–1400	16 (31)	51
Thyolo Mt	mid-altitude	1170–1450	16 (28)	58
Chikala	mid-altitude	1300–1600	10 (21)	47
Mangochi	submontane	1550–1700	10 (28)	36
Chongoni	submontane	1600–1950	14 (47)	30
Zomba–Malosa	submontane	1600–1950	17 (53)	32
Mulanje Mt	(sub) montane	1500–2300	22 (69)	32
Chirobwe	submontane	1800–2000	16 (57)	28
Dedza	(sub) montane	1800–2150	13 (62)	21

descend lower on large mountains, and lowland species ascend higher on smaller (warmer) ones—a fact also widely observed in trees (White 1978, Dowsett-Lemaire 1989b).

The effect of these relief-related climatic factors is illustrated in Table 8 for 21 montane bird species. Of 20 present on Mulanje and other highlands in southern Malawi, 13 occur significantly lower on the former. Responses of birds to environmental factors vary between individual species and, not surprisingly, no two species have exactly the same altitudinal range. *Columba arquatrix*, *Andropadus nigriceps* and *Turdus olivaceus* can be characterized as high montane elements. In several fairly unspecialized passerines, the upper altitudinal level reached is determined by the upper limit of forest (2450 m on Nyika, 2300–2400 m on Mulanje, 2150 m on Dedza): *Andropadus nigriceps*, *Pogonocichla*, *Cossypha anomala*, *Bradypterus lopezi*, *Apalis thoracica*, *Batis capensis*, *Elminia albonotata*, *Nectarinia mediocris*. But all these differ in their lower altitudinal limits, though the two flycatchers come close; it is believed that *Pogonocichla*, widespread in any type and size of mid-altitude forest in the south, is excluded from that level in the north by *Sheppardia gunningi*. *Turdus gurneyi* and *Phylloscopus ruficapilla* are examples of species common in the moist, tall mid-altitude forests of the south and absent from similar levels in the north. In *Apaloderma vittatum* and *Schoutedenapus myoptilus* the upper altitudinal limit is similar to that of tall-canopy forest—2350 m on E Nyika in the north, *c.* 2000 m on Mulanje in the south.

Table 8. *Regional variations in the altitudinal range (m) of some widespread montane forest birds*

Species	N of 14°S	S of 14°S	
		Mulanje Mt	Elsewhere
Columba arquatrix	1500–2300	1500–2300	1500–2150
Aplopelia larvata	1100–2300	1050–2000	1050–2100
Schoutedenapus myoptilus	16002350	*c.* 1200–2000	1200–1450
Apaloderma vittatum	1400–2200	1400–2000	1300–1900
Pogoniulus leucomystax	1400–2300	1400–2000	1300–2150
Andropadus milanjensis	1100–2250	1000–1850	1100–2000
A. nigriceps	1600–2450	1500–2300	1600–1950
Phyllastrephus placidus	1100–2000	700/900–1820	1000–2000
Alethe choloensis	absent	700/900–1820	1200–1900
Pogonocichla stellata	1400–2450	1000–2300	1200–2150
Cossypha anomala	1600–2450	1000–2300	absent
Turdus gurneyi	1450–2350	1050–2200	1200–2150
T. olivaceus	1700–2450	1600–2200	1400–2100
Bradypterus lopezi	1250–2450	950–2300	1150–2150
Phylloscopus ruficapilla	1400–2350	900–1900	1200–1950
Apalis thoracica	1400–2450	1000–2400	1100–2150
Batis capensis	1150–2450	1000–2300	1200–2150
Elminia albonotata	1200–2450	1050–2300	1250–2150
Malaconotus olivaceus	absent	1000–2200	1300–2150
Nectarinia mediocris	1400–2450	1100–2400	1300–2150
Cryptospiza reichenovii	1500–2300	900–2200	1200–2150

Examples of lowland elements occurring higher on smaller mountains include *Apaloderma narina* (to 1600 m on Ntchisi and Chikala, but 1000 m on the southern slopes of Mulanje and 1250 m on the drier western side) and various passerines—*Erythropygia quadrivirgata*, *Cossypha natalensis*, *Apalis flavida*, *Platysteira peltata*, *Trochocercus cyanomelas*, *Hypargos niveoguttatus*, etc.

In mountain areas where the foothills are directly connected to the Guineo–Congolian rain forest, the number of species increases considerably with decreasing altitude (e.g. in eastern Zaïre: Prigogine 1980). On truly isolated massifs, the avifauna of the lower levels is impoverished, and the greatest number of species is observed at medium or submontane elevations (e.g. the Impenetrable Forest in Uganda: Keith *et al.* 1969, Keith 1980).

9.3. Area and other factors related to species numbers

The relationship between the number of species (flora or fauna) and the size of different habitat islands occupied has generated a lot of interest, and controversy in its interpretation (important review by Gilbert 1980; also Higgs 1981, Boecklen 1986). There is increasing evidence that habitat heterogeneity is an important underlying component of the species–area relationship (e.g. Boecklen 1986), although the fact that area and habitat diversity may themselves be strongly correlated (Rafe *et al.* 1985) has rarely been considered by earlier authors.

The Malawi sample of over 40 forest 'islands' provides a unique opportunity to compare the effect of these two factors, and a third (altitudinal range) on bird species diversity. Habitat diversity is expressed here by the total number of tree and woody shrub

species (2 m high and above) as this was the most readily measured variable. As each tree species has its own microstructure, an increase in species numbers reflects an increase in the overall structural complexity of the forest (e.g. in feeding niches for insectivores) and also represents a more diverse fruit assemblage (of direct relevance to frugivorous birds).

For reasons exposed in the above chapters (e.g. important variations in forest flora and avifauna between regions and along the altitudinal gradient), it is best to consider subsamples of forest localities within certains regions and altitudinal limits. Lowland forests are excluded from this analysis as there are too few of them and their avifauna is impoverished.

A preliminary study (after one season) of the breeding avifauna of 89 patches of submontane forest on the SW Nyika (1950–2200 m) showed area (y) to be strongly correlated to bird species numbers (x_1)—Fig. 1 in Dowsett-Lemaire & Dowsett (1984), though the formula should read $\log y = 1.13 + 0.25 \log x_1$. The regression coefficient differed significantly from zero ($P < 0.001$) and r^2 (square of the correlation factor, expressing the percentage of the variance accounted for by the regression equation) was 83 per cent. A more complete study after three seasons gave

$$\log y = 1.15 + 0.3 \log x_1 \ (P < 0.001;\ r^2 = 86 \text{ per cent})$$

Tree species were censused in 12 of these patches, all 20–25 m tall, situated within a narrow altitudinal range (2100–2200 m) and varying from 0.2 to 90 ha. Each patch is in grassland, 50–100 m from others. The number of breeding bird species (y) shows a significant relationship with area (x_1)

$$y = 4.3 + 10.2 \log x_1 \ (P < 0.001;\ r^2 = 98 \text{ per cent})$$

and also with number of tree species (x_2)

$$y = -95 + 62.7 \log x_2 \ (P < 0.001;\ r^2 = 98 \text{ per cent})$$

Floristic diversity and area are themselves strongly correlated

$$\log x_2 = 1.7 + 0.16 \log x_1 \ (P < 0.001;\ r^2 = 98 \text{ per cent})$$

From the similarly high values of r^2 for both factors, it seems likely that area and floristic diversity are equally important in influencing bird numbers, though their inter-relationship calls for caution in this interpretation.

A similar analysis can be extended to the submontane forests of the north above 1600 m (Misuku to S Viphya), excluding Musisi (incompletely surveyed) and E Nyika (as the forests are above the altitudinal limit of several species, and thus relatively 'impoverished' for their size). At the ten forest localities considered, probably no more than one or two species could have been overlooked (e.g. elusive *Sarothrura elegans*). Isolation plays a similar role for all, as each site is 15–25 km from its nearest neighbours. The effect of altitudinal range can be studied in addition to that of area and floristic diversity. The number of bird species (y) is related to area (x_1) by the following regression equation

$$y = 10.9 + 11.7 \log x_1 \ (P < 0.001;\ r^2 = 92 \text{ per cent})$$

to floristic diversity (x_2) by

$$y = -64.5 + 52.6 \log x_2 \ (P < 0.001;\ r^2 = 77 \text{ per cent})$$

and to altitudinal range (x_3) by

$$\log y = 1.05 + 0.24 \log x_3 \ (P < 0.001;\ r^2 = 83 \text{ per cent})$$

As for the Nyika sample, floristic diversity and area are also strongly correlated

$$\log x_2 = 1.54 + 0.18 \log x_1 \ (P < 0.001;\ r^2 = 76 \text{ per cent})$$

and so are altitudinal range and area

$$\log x_3 = 0.96 + 0.53 \log x_1 \ (P < 0.001;\ r^2 = 85 \text{ per cent})$$

and floristic diversity and altitudinal range

$$x_2 = 47.6 + 0.22\, x_3 \ (P < 0.001;\ r^2 = 94 \text{ per cent})$$

High values of r^2 suggest all three factors influence bird species numbers; but again, inter-correlations between them call for caution in the interpretation of relationships which in any case are not necessarily causal.

In the central highlands of Malawi, the sample of forests is rather small (n = 7 after excluding the relict, artificially reduced mid-altitude forests), and area is the only factor weakly correlated to bird species number

$$\log y = 1.09 + 0.14 \log x_1 \ (P < 0.05;\ r^2 = 66 \text{ per cent})$$

In the southeast, the analysis is limited to the eight localities of mid-altitude forest, as submontane forests are too few. Area remains a good predictor of bird species numbers

$$\log y = 1.34 + 0.13 \log x_1 \ (P < 0.005;\ r^2 = 80 \text{ per cent})$$

but not floristic diversity (r^2 = 45 per cent), even though, overall, the greatest diversity in both bird and tree species is observed at medium elevations (Chapter 9.2). It is striking that Thyolo Mt, the single richest forest in birds (58 species) has a much poorer flora (72 tree species) than the middle slopes of Mulanje (124 tree species, 51 bird species): however, the canopy at Mulanje is dominated by pod-bearing *Newtonia buchananii* and at Thyolo by several *Ficus* trees. The latter provide an ample food supply and probably explain the presence there of several frugivores (*Stactolaema* spp., *Columba delegorguei*) absent from S Mulanje. Other species (e.g. *Oriolus chlorocephalus*) may be excluded from the Mulanje slopes by the colder microclimate of the ravine forests.

Chapter 10. ENDEMISM AND ISOLATION IN THE HIGHLANDS OF MALAWI

Endemism in the different African mountain systems has been described by Dowsett (1986) and shown among forest birds to be highest in the most isolated Cameroun–Nigeria group (nearly 50 per cent of the species, see also Stuart & Miller, Ms), while it approaches 35 per cent in the E Zaïre group. The Tanzania–Malawi group (*sensu lato* from Usambara south to Thyolo–Chiperone) is the third richest, with 15 endemics (27 per cent): six turdines (*Modulatrix stictigula*, Dappled Mountain Robin *M. orostruthus*, Iringa Ground Robin *Sheppardia lowei*, Usambara Ground Robin *S. montana*, *S. sharpei*, *Alethe choloensis*), four warblers (*Apalis chapini*, Long-billed Apalis *A. moreaui*, Mrs Moreau's Warbler *Bathmocercus winifredae*, Red-capped Forest Warbler *Artisornis metopias*), four sunbirds (Banded Green Sunbird *Anthreptes rubritorques*, Loveridge's Sunbird *Nectarinia loveridgei*, Moreau's Sunbird *N.* (*loveridgei*) *moreaui*, Rufous-winged Sunbird *N. rufipennis*), and one bush-shrike (Uluguru Bush Shrike *Malaconotus alius*). Several of the Tanzanian endemics are confined to single large massifs (e.g. Stuart & Jensen 1985), but in Malawi only *Alethe choloensis* has a fairly restricted distribution, in the southeast and adjacent N Mozambique.

In addition, several well-marked races are endemic to limited areas. *Apalis thoracica flavigularis*, the most distinctive of four races of this apalis found in Malawi, is confined to Mulanje and Zomba–Malosa; and *A. t. youngi* to the Nyika and Viphya plateaux. *Malaconotus olivaceus* also has a subspecies confined to Mulanje and Zomba–Malosa (*bertrandi*), whereas the *makawa* race of central Malawi is similar to Zimbabwe birds. Nominate *Cossypha anomala* is restricted to Mulanje, Chiperone and Namuli Mts in adjacent Mozambique, and the nearest populations of the species are 460 km distant in northern Malawi. The race *belcheri* of the barbet *Stactolaema olivacea* (a species montane in parts of its range) occurs on two mountains only (Thyolo and Namuli some 200 km apart) and is greatly isolated from other populations (Dowsett-Lemaire & Dowsett 1987). The nearest conspecifics of the elusive thrush *Turdus fischeri belcheri* (endemic to southeast Malawi) are in southeast Zaïre and Natal, South Africa. The race *nyasae* of *Trichastoma pyrrhopterum* (Nyika and N Viphya) is 650 km south of the nearest population in western Tanzania; despite their isolation, these birds produce a group song identical to that of nominate *pyrrhopterum* and reacted strongly to a tape of Uganda birds (recorded by Keith, *in* Keith & Gunn 1971) that I played to them.

Of the 30 non-forest species of the Tanzania–Malawi mountain group, three are local endemics with restricted distributions in southwest Tanzania and northern Malawi (Black-lored Cisticola *Cisticola nigriloris*, Churring Cisticola *C. njombe* and Mountain Marsh Whydah *Euplectes psammocromius*). In addition, the forest-edge weaver *Ploceus baglafecht* and sunbird *Nectarinia afra*, and one grassland bird, Red-winged Francolin *Francolinus levaillantii*, have well-marked races endemic to the Nyika Plateau (Benson 1953b) and are isolated to varying degrees—especially the sunbird whose closest relatives are in eastern Zaïre and South Africa. The Afro-alpine relict Scarlet-tufted Malachite Sunbird *Nectarinia johnstoni nyikensis* is probably endemic to the Nyika and is greatly isolated from central and eastern African races (Hall & Moreau 1970). The warbler *Bradypterus cinnamomeus*, of secondary growth and bracken thickets, belongs to a group of dull-plumaged birds where subspeciation could be hard to notice, but its confinement to Mulanje Mt south of the N Viphya is remarkable (the nearest population is 550 km to the north).

Among the lowland or mid-altitude forest birds, only two have endemic races in Malawi: *Francolinus squamatus doni* (S Viphya, some 450 km from the nearest locality for the species, in Tanzania) and *Sheppardia gunningi bensoni* (Lake-shore and Viphyas); the latter is represented by a population widely disjunct from the other two, in coastal East Africa and Mozambique (Hall & Moreau 1970). The song of this robin has evolved into a dialect quite distinct from that recorded in Mozambique (Transvaal Museum Sound Library), but characters of timbre and syntax are close and two Malawi birds tested with the foreign dialect reacted to it as to their own song.

Isolation has not produced phenotypic changes in every species: for example the populations of *Alcippe abyssinica* on Namizimu and Mangochi Mts belong to the same race (*stictigula*) as those of northern Malawi, 300 km distant; the same is true for the populations of *Andropadus nigriceps* of northern and southeast Malawi, separated by 370 km. *Coracina caesia*, despite some enormous gaps in its distribution, has only two recognizable races over the whole of its African range (Hall & Moreau 1970). Within the Tanzania–Malawi group *sensu* Dowsett, two thirds of the forest species are represented by a single subspecies, and only a few by more than two (Dowsett 1980); even in the highly isolated Angolan mountains, several species do not differ subspecifically from populations elsewhere. Dowsett has argued that isolation *per se* may not necessarily result in

speciation, and this may be especially relevant for resident forest species experiencing relatively little ecological stress.

To sum up, forest birds in Malawi have undergone limited genetic differentiation in an area centred on the massifs of Mulanje and Thyolo, and even less elsewhere. Most of the endemic races relate to isolated populations, but not all isolates show phenotypic change. On the Nyika Plateau, four species of open habitats have endemic races as against one from forest interior, indicating perhaps that genetic change comes more quickly in birds more exposed to ecological stress.

Among forest plants, local endemism in Malawi is extremely low, nearing 1 per cent (for tree species) on Mulanje and less elsewhere (Dowsett-Lemaire 1989b).

Chapter 11. DISTRIBUTION GAPS AND THE ROLE OF COMPETITION AND ISOLATION

"Presumably there are ecological reasons for most local presences and absences, though these may often not be obvious" (Dowsett 1980: 195). When the forest avifaunas of the three regions of Malawi are compared to variations in size and structure of the habitat (Chapter 9), most of the local gaps in species distribution can be explained on ecological grounds. Patchy distribution within a region is often clearly related to the birds' ecological requirements. For example, *Apaloderma vittatum*'s niche—sheltered mid-stratum under tall, fairly continuous canopy, within a certain altitudinal range—is not met everywhere, and the bird is absent from or only an occasional wanderer to forests that are too low or scrubby (e.g. Mangochi Mt, most of the central highlands), or where the canopy is too discontinuous, or both (e.g. S Viphya).

Interspecific competition between close relatives may further restrict the range of some species. The montane avifauna in Africa is characterized by a very low ratio of species to genera (about 2 to 1: Table 1 in Dowsett 1986). Even when lowland elements are considered, 43 of 66 genera in the Malawi forests are represented by only one species, and the ratio of species to genera is 1.6 to 1. In the other 23 genera, there is often local exclusion between congeners.

Examples of complete altitudinal replacement are found in *Cossypha* (*anomala* and *natalensis*) and *Sheppardia* species, and almost complete replacement in the two *Apaloderma* and *Malaconotus* spp. Examples of geographical replacement are more common: between the two green *Tauraco*, the two green *Pogoniulus*, two *Dendropicos*, two *Alethe*, three *Batis*; and there is only marginal overlap between the two *Bycanistes* and *Stactolaema*. The fruit diets of the *Tauraco* and *Bycanistes* are reasonably well-known, and overlap considerably (Dowsett-Lemaire 1988b). In only five passerine genera is it normal to find two species side by side, with a maximum locally of three (*Andropadus*, *Turdus*, *Apalis* and *Nectarinia*) or four (*Phyllastrephus*). In all of these but *Turdus*, three species coexist only if at least two are vertically segregated.

The extent to which two close relatives exclude each other altitudinally in parapatry can be demonstrated by the situation in allopatry: thus in the absence of *Apaloderma vittatum* from the Ethiopian mountain group, *A. narina* occurs widely in montane forest up to 3500 m (Fry *et al.* 1988). In the forests of northern Malawi, the number of coexisting *Apalis* warblers may be influenced by the structural diversity of the forests: three species (*A. chapini*, *cinerea* and *thoracica*) occur side by side (albeit with some altitudinal and territorial replacements) on the SW Nyika and in parts of the Misuku Hills. In the more broken and secondary forests of Mafinga and Musisi, and on Jembya (where the

understorey is unusually open), only two coexist, *A. thoracica* having given way to *A. cinerea*—though the former is the heavier of the two (Dowsett-Lemaire 1983d: 369). In the mid-altitude forest relicts on the Zambian plateau, *A. thoracica* and *cinerea* are essentially allopatric (Benson *et al.* 1971).

Territorial replacement and frequent countersinging between these three *Apalis* warblers are proof of direct interspecific competition. In other groups of species, one can only suppose that competition is responsible for the dominance of one relative by another: the fact that numbers of *Phyllastrephus placidus* in northern Malawi are inversely related to those of *P. flavostriatus alfredi* may also reflect a different response to some environmental factor that is not obvious to the observer. And the same comment could apply to the pair *Turdus gurneyi–T. olivaceus*.

In addition to the factors discussed above, historical reasons, i.e. variations in the extent of forest and in the ways it was recolonized during the climatic vicissitudes of the Quaternary, are likely to be responsible for some of the more puzzling distribution gaps. I have already mentioned (Chapter 9.1) that the absence of a generalist *Andropadus* bulbul (especially *A. nigriceps*) from the high montane forests of Dedza and Chongoni Mts appears abnormal. Presumably, the reduction in forest cover in a drier phase could have led to local extinction, and present populations of *A. nigriceps* to the east and north are too far away (150 and 210 km respectively) to permit recolonization.

The absence of five montane passerines from the Misuku Hills (*Alcippe abyssinica*, *Andropadus nigriceps*, *Phyllastrephus flavostriatus alfredi*, *Cossypha anomala*, *Sheppardia sharpei*) seems even more anomalous, since the habitat appears suitable—the forests are of great size, cover a wide altitudinal range from 1600 to 2050 m, and are structurally the most luxuriant and floristically the most diverse in the north (Dowsett-Lemaire 1989b). Moreover, all five species occur on mountains to the north in southwest Tanzania (the *Andropadus*, *Cossypha* and *Alcippe* as near as in the Isoko Hills, *c.* 22 km distant, Benson & Benson 1949) and to the south. The *Phyllastrephus* and *Andropadus* in particular are common in all the other forests of northern Malawi, including the Mafinga Mts 25 km away and in sight of the Misukus. All of these passerines are basically resident, but occasional altitudinal or inter-montane movements are known for the two bulbuls involving distances slightly greater than 25 km. Possibly the joint occurrence in the Misukus of *Phyllastrephus placidus* and *Andropadus masukuensis*, both feeding on bark, and the niche expansion of the former into the mid-stratum, hamper recolonization by *P. flavostriatus*. The fact also that three species (*Modulatrix stictigula*, *Apalis thoracica*, *Laniarius fuelleborni*) are absent from one of the three Misuku forests (720-ha Mugesse), and that the *Apalis* and *Laniarius* do not seem to fill all suitable habitat in the other two (especially in Wilindi closer to Mugesse), supports the hypothesis that recolonization of the area is not yet completed. Such process may be extremely slow in species with little dispersal ability (see Chapter 12.3), and the population dynamics of montane forest birds in general are characterized by low breeding productivity and turnover rates (Dowsett-Lemaire 1985a, Dowsett 1985). Another case in point is Ntchisi Forest, the most isolated patch of fine submontane forest in the country: some of the species present are known to be wide-ranging (e.g. *Apaloderma vittatum*) and some of the absentees have clearly very limited colonizing abilities (e.g. *Elminia albonotata*, see Chapter 12.3).

Chapter 12. THE MOBILITY OF FOREST BIRDS

One can recognize three types of movements in the forest birds studied, albeit that in a few cases different strategies can be observed in different populations or individuals of the same species.

12.1. Intra-African migration

As stressed by Dowsett (in press), the subject of intra-African migration is ripe for a comprehensive review. Much scattered literature and unpublished information remains to be analysed in the way a few species have been treated by, for example, Britton (1971, 1973). Benson's (1982) list of species subject to local movements or migration south of the equator suffers from a number of omissions.

Among the bird species breeding in the Malawi forests, *Campephaga flava* (Britton 1973), *Terpsiphone viridis* (e.g. Benson *et al.* 1971, Benson & Benson 1977) and *Cinnyricinclus leucogaster* (Traylor 1971) are known to undertake complex migratory movements through south-central Africa, the timing and extent of which often vary in different populations. These are more typical inhabitants of woodland and thicket than forest. The forest-thicket robin *Cossypha natalensis* is wholly or partly migratory in several parts of its range (Britton 1971) but is resident in at least some areas of Malawi, though the evidence so far is fragmentary. The elusive rail *Sarothrura elegans* calls only in the rains and is suspected of undertaking some movements, as birds have been attracted to lighted windows at night (e.g. Benson 1957). There is a June record in Malawi, however, and in Natal (one of the species's headquarters), it is reported in all months (Cyrus & Robson 1980). Benson (1982) also suspected the cuckoo *Cercococcyx montanus* to be a breeding migrant in Malawi (it is never heard in the dry season), but individuals have been caught in June in the south (Benson & Benson 1977: 253) and in Mozambique (Irwin 1981); the situation in East Africa is far from clear (Stuart & Jensen 1985).

Both *Bycanistes* hornbills wander, singly or in flocks, outside the breeding season; in addition, over 90 per cent of the *B. brevis* population of the Misuku hills is migratory, leaving each year in mid-rains for an unknown, but almost certainly northerly, destination.

Of the 38 montane (near-) endemic species, only two (*Columba arquatrix*, *Schoutedenapus myoptilus*) are clearly breeding migrants, the swift entirely so. Although several African swifts are well-known intra-continental migrants, the case of *S. myoptilus* seems largely to have escaped attention. In eastern Zaïre, interestingly, Prigogine (1966) noticed marked fluctuations in numbers on the edge of the Itombwe massif: from rare or absent in most months, the species suddenly becomes abundant from mid-June to September. In October–November, birds appear to move southwards. In Zimbabwe, most records are from the rains (M.P.S. Irwin *in litt.*). In the little-explored Uzungwa Mts of Tanzania (*c.* 8°S, 36°E) small flocks have been seen flying over in July and August (Stuart *et al.* 1987). It seems likely that, in March–April (at the end of the rains), the Malawi birds move nearer the equator.

In *Columba arquatrix*, over 90 per cent of the population of the north (perhaps less in the south) vacates the country in December. Returns, in June or August depending on the year, are finely tuned to the fruiting of particular food trees. In the southern Cape, birds move into the forests in their hundreds when *Olea capensis* fruits massively every 2–3 years (Phillips 1927, pers. obs.). Elsewhere in Africa, this pigeon is thought to range widely between isolated forests, but there is ample scope for study of these movements in relation to the phenology of favourite fruit trees. Fruiting of most tree species in Malawi is strongly seasonal and thus predictable (Dowsett-Lemaire 1985b, 1988b), and this is

true generally of tropical forests with at least one marked dry season. From Malawi, *C. arquatrix* probably migrate north to forests experiencing a different rainfall regime with, concomittantly, different patterns in the seasonal availability of fruit.

12.2. Altitudinal migration

Altitudinal movements during the non-breeding season have been recorded so far in 25 species, of which 22 are Montane (near-) endemics. The other three include *Campephaga flava* (see above) in which the movement off the plateau areas is fairly general; *Muscicapa adusta*, a forest-woodland flycatcher whose populations show a partial altitudinal shift in the winter (cf. Benson *et al.* 1971, Benson & Benson 1977); and *Bycanistes bucinator* in at least one high-altitude location (Nyika).

Of the montane birds, *Pogonocichla stellata* is affected by an important shift of population from January to September throughout Malawi: on the SW Nyika near the upper altitudinal limit, all adult females leave, as well as non-territorial adults of both sexes and many immatures. The situation in the colder and wetter forests of the E Nyika and the high Mulanje plateaux requires investigation. In the highlands of Zimbabwe, all forests above 1300 m are (almost) completely deserted, but the population of Chirinda Forest (900–1200 m) is apparently sedentary (Irwin 1981). In the Midlands of Natal, Oatley (1982) found that territorial males stay (as on the Nyika), those that leave including immatures and adults of both sexes; there is also a small influx of unringed birds that winter, coming presumably from higher altitudes. From dated specimens and published observations, Dowsett (1982) showed that partial altitudinal migration in winter is a regular phenomenon for populations of southeast and East Africa north to the extreme south of Kenya. In eastern Zaïre (Prigogine 1980) and the central Kenya highlands, there is no clear evidence of such movements, and breeding at these latitudes may be fairly aseasonal (Brown & Britton 1980). In several cases the shortest distance between breeding and wintering locations is 60 to over 100 km, and the coast is reached regularly from Tanzania southwards.

In the Nyika study area, one other species, *Alethe fuelleborni*, appears to be a partial migrant, individuals (especially females) moving out in April–September, probably to lower altitudes. Several individuals of this *Alethe* have indeed been seen or collected in lowland forest in eastern Tanzania (Stuart & Jensen 1981, 1985, Stuart *et al.* 1987) and coastal Mozambique (Clancey & Lawson 1969) in the dry months of June to September.

Of the 20 remaining montane birds for which there are low altitude records, observations on Mulanje Mt show there is a regular downward shift in at least 11 species (*Aplopelia larvata*, *Andropadus milanjensis*, *A. nigriceps*, *Alethe choloensis*, *Turdus gurneyi*, *Bradypterus lopezi*, *Phylloscopus ruficapilla*, *Apalis thoracica*, *Batis capensis*, *Elminia albonotata*, *Nectarinia mediocris*), in addition to *Pogonocichla* already discussed, indicative of partial migration. For nine species at Mulanje and elsewhere (*Columba arquatrix*, *Apaloderma vittatum*, *Pogoniulus leucomystax*, *Coracina caesia*, *Andropadus masukuensis*, *Phyllastrephus flavostriatus alfredi*, *Turdus olivaceus*, *T. fischeri*, *Apalis chapini*) data are not sufficient to identify the movement as true migration (albeit concerning a tiny fraction of the population) or merely wandering.

The relatively high number of species involved in altitudinal migration down Mulanje Mt is probably related to the inhospitable conditions of the high plateaux in the winter months, which experience more rainfall than any other high mountain in the country. A study monitoring the proportion of the populations leaving the plateaux forests would be instructive. This movement is also undoubtedly facilitated by the continuum of the forest habitat from high to low altitudes, a situation unique in Malawi. Several of the passerine

birds migrating up and down Mulanje are known to be strictly sedentary on the SW Nyika—an area which, at the other extreme, experiences a sunny winter. In three species for which there are good ringing samples and many resightings, the maximum range of local movements is 2600 and 2450 m in some *Batis capensis* and *Elminia albonotata* wandering after breeding, and only 625 m in *Apalis thoracica* (Dowsett 1985). Also on the Nyika translocation experiments across 6 km of forest-grassland mosaic have shown the *Apalis* and *Elminia* to lack navigational ability totally, but some of the *Batis* managed to return after several weeks—whereas some *Pogonocichla*, not surprisingly, returned within a day or two (Dowsett & Dowsett-Lemaire 1986).

The occurrence of montane forest birds at unusually low altitudes in some months has been documented for about a dozen species on Mt Cameroun (evidence reviewed by Stuart 1986, including a *Turdus gurneyi* ringed at 650 m in December and retrapped at 200 m in January). Individuals of up to a dozen species have also been reported in the winter months in the lowland forests of eastern Tanzania (Stuart & Jensen 1981, 1985, Stuart *et al.* 1987). For both regions however, the breeding seasons and normal altitudinal ranges of forest birds when breeding are still poorly known, the published data being few (Brown & Britton 1980, Serle 1981). In the eastern highlands of Zimbabwe, the status of montane forest birds is better documented: 13 species undertake altitudinal migration after breeding, two (*Pogonocichla stellata*, Barratt's Warbler *Bradypterus barratti*) deserting the highlands (almost) completely from April–May (Irwin 1981). The exodus by *P. stellata* is so massive that Irwin suspects the bulk of the population must move into lowland Mozambique.

Clancey (1971) has paid little attention to this topic in Mozambique, merely mentioning winter movements in *Batis capensis*, without supporting detail. For *Aplopelia larvata*, Clancey (1971) quotes Irwin as saying that it is common in coastal forest, but M.P.S. Irwin (*in litt.*, 1989) believes it is only occasional there and records are for the winter months. In Natal, several Turdidae and the *Batis* reach the coast in winter (Oatley 1966, Cyrus & Robson 1980) and other species probably do so judging by the Atlas maps published by Cyrus & Robson (e.g. *Coracina caesia* north of 30°S), but their text gives no information. In that region, *Turdus fischeri* is subject to both latitudinal (Britton & Rathbun 1978) and altitudinal movements—as between mid-altitude forests in Zululand where it breeds, and the coast, I. Garland pers. comm. In Kenya and northern Tanzania the breeding grounds of *T. fischeri* are not yet identified; the species is still known only from some small coastal forests where it resides from April–May to September, after breeding (as three quarters of the birds caught on arrival are subadults: Britton & Rathbun 1978, Britton 1980). No doubt this elusive bird is (as in Natal) easier to locate in its winter quarters because of the drastic contraction of coastal forest and the resulting concentration of individuals.

In Malawi, downward movements start in January–February in several species (*Andropadus milanjensis*, *Pogonocichla stellata*, *Phylloscopus ruficapilla*, *Batis capensis*, *Elminia albonotata*), two to three months before temperatures start dropping, and apparently later (after the main rains) in others (*Turdus*, *Alethe*). Female *Pogonocichla* leave as soon as their breeding duties are over, i.e. between January and March; by late December, after three months of breeding, the population pressure on the environment has reached a peak, and the early departure of some birds can only be beneficial. Although the evidence is still very fragmentary, it seems that, of the 30-plus species of montane forest reported (at least occasionally) to move to low altitudes in Malawi and elsewhere, many remain common at high levels throughout the year; i.e. these movements involve relatively few individuals. The ecological benefit in such cases may be negligible; the potential mobility of these species shows, however, adaptative behaviour in the long term to climatic changes.

12.3. Nomadism and inter-montane movements

Since our knowledge of breeding distribution and ecological requirements of Malawi forest birds has become so much more accurate in recent years, it has been possible to identify erratic and inter-forest movements through inhospitable country in 15 species. *Apaloderma vittatum* and *Malaconotus multicolor* in particular show remarkable exploratory behaviour: the trogon has been reported to visit as many as six forest localities (some several times) where it does not breed, and the bush shrike three, two of them on more than one occasion. In some cases (e.g. *Aplopelia larvata* in the Malawi Hills), these movements may be regular, but more information is needed. The distances crossed between the nearest established populations and these places of dispersal range from 20 to 100 or more kilometres in a straight line: *c.* 20 km in *Dendropicos griseocephalus* and *Linurgus olivaceus*; 30–32 km in *Andropadus nigriceps*, *Phyllastrephus flavostriatus alfredi*, *Turdus gurneyi* and *Apalis chapini*; 40 km in *Oriolus chlorocephalus*; up to 70 km in *Pogoniulus leucomystax*; 80 km in *Aplopelia larvata*, *Coracina caesia*, *Phylloscopus ruficapilla* and *Apalis chariessa* (the latter across the Rift Valley); 100 km in *Apaloderma vittatum*, *Bycanistes brevis* and *Malaconotus multicolor*. In addition, the migrants *Pogonocichla stellata* may travel 80–100 km or more from summer to winter quarters, and *Columba arquatrix* and *Schoutedenapus myoptilus* probably over several hundred kilometres.

The instances of *Malaconotus* and *Apaloderma* reaching Mangochi Mt, *Aplopelia* and *Coracina* reaching the Malawi Hills area and *Apalis chariessa* turning up in the Kirk Range imply crossing some 80 km of totally inhospitable country, unless these birds are able to feed in unusual habitat. Forest birds have very rarely been observed away from typical habitat. Moreau (1966: 194) could find only two examples, neither of them very convincing (e.g. *Pogoniulus bilineatus* is not entirely confined to evergreen forest anyway). *Coracina caesia* was once collected in riverine *Brachystegia* woodland in lowland Mozambique (Clancey 1971) and *Modulatrix stictigula* in 'bushland' at 600 m in Tanzania, north of the Uluguru Mts (Britton 1981).

Although it is difficult to find clearly documented examples of inter-forest movements outside Malawi, Irwin (1981) does mention a stray *Coracina caesia* on a mountain 300 km from the nearest population in Zimbabwe. Other cases may have been overlooked because the local status of the species was not known; for many years *Apaloderma vittatum* and *Oriolus chlorocephalus* have been considered as 'extinct' on Chiradzulu Mt (= Lisau) from the lack of recent records (e.g. Benson 1948, Benson & Benson 1977), without much thought being given to the possibility of local wanderings to a forest type not meeting the ecological requirements of the species.

The mobility of forest birds and their colonizing ability vary greatly between species. *Columba arquatrix* and *Apaloderma vittatum*, both wide-ranging, seem to occupy practically all suitable forests in Malawi, but this is not true of some more sedentary passerines (e.g. *Andropadus nigriceps* absent from the Misuku Hills and Dedza–Chongoni, *Elminia albonotata* absent from the isolated Ntchisi Forest). In the translocation experiments undertaken over 6 km on the Nyika Plateau (Dowsett & Dowsett-Lemaire 1986), the only two territorial male *Elminia* of a small forested valley were removed, upon which their mates deserted; 18 months later both territories were still empty, and three years later only one of them was re-occupied by a pair. These forest patches were no further than 1 km from other, more densely forested valleys, but a grassy ridge hid them from sight. In another species, *Batis capensis*, recolonization of vacated territories was quicker as some removed individuals found their way back, but not yet completed after three years.

Only single individuals are involved in most examples of inter-forest movements reviewed above, and the time needed before a population becomes established in an isolated forest could be considerable.

Chapter 13. LATE QUATERNARY HISTORY OF CLIMATE AND VEGETATION IN THE AFRICAN MOUNTAINS

I have recently reviewed this topic in a botanical paper (Dowsett-Lemaire 1989b), but given the controversy attached to it, the main theories and facts are summarized here. From variations in lake levels and some palynological data, it is now fairly widely admitted that glacial maxima corresponded to periods of relative aridity in tropical Africa, and that over the last 500 000 years there have been several dry phases alternating with warmer pluvials (e.g. reviews by Hamilton 1974, Livingstone 1975, van Zinderen Bakker 1983). The extent of the changes in forest cover at low and high altitudes during these climatic processes, in particular the last glacial, has been the subject of much controversy.

The extreme view of Livingstone (1975), based on pollen analyses in a few highland sites, that "forest trees disappeared from the mountains" (p. 262) prior to 12 000 years B.P. has not been upheld by biogeographers since. White (1981) pointed out that the ecological interpretation given to relatively fragmentary stratigraphical facts by Livingstone and his colleagues is very much open to question. Moreover the chorological, ecological and taxonomic relationships of the Afromontane tree flora are extremely diverse, and this complexity is "incompatible with climatic models which postulate the almost total disappearance of forest...during Pleistocene phases of glacial advance" (White 1983b). On some biogeographical evidence, Diamond & Hamilton (1980; and Diamond 1981 and Hamilton 1981) conclude that several montane forest refugia have persisted in West and East Africa. However, they go on to say that "montane forest is probably as extensive now as at any time during the Quaternary" and "there is no evidence of past connections between currently isolated montane forests" (Diamond & Hamilton 1980: 379). The first statement is surprising in view of the drastic and ever increasing effects of man-induced fires and local felling in shaping African vegetation in historical times (a fact acknowledged by Hamilton (1974) earlier), added to a general drying of the climate again in the last five or six millenia. The second statement leads the authors to postulate that montane birds with disjunct distributions have extremely wide-ranging inter-forest movements—on a scale far greater than suggested by the limited mobility of forest birds reviewed above—or that they are able to adapt to lowland forest conditions—e.g. to reach distant mountains on either side of the Zaïre basin. There is no evidence to support these suppositions, nor any need to seek it. On the contrary, a connecting route between the mountains of East, West Africa and Angola is apparent today from relict populations of some montane trees and birds in several mid-altitude stations along the "southern migratory route" (Chapter 8). Step by step progression along this and other possible routes is likely to have taken place more than once in climatic conditions not very different from the present; such steps could have been small if much of what is now moist miombo woodland were forest before man-induced fires became frequent (Chapter 8).

For Malawi, palynological and other studies give no information on environmental changes prior to 10 000 years B.P. Fluctuations in the levels of two internal lakes in southern Malawi and southwest Tanzania indicate that conditions were wetter 8–9000 years B.P. than at present (Meadows 1984a). In a peat-bog on the high Nyika, Schröder (1976) discovered important charcoal deposits for the period of 10 to 5000 years B.P.,

suggesting that the forests then destroyed were extensive. A radical change in the vegetation followed, and fibrous peat (the product of sedges, reeds and grasses) began to accumulate. This bog is in an area now dominated by montane grassland (over 97 per cent cover). Meadows (1984b) has also argued that montane grassland has far surpassed the importance of forest over the central Nyika (above 2250 m) for the past five millenia, but unfortunately his data from two other peat-bogs are difficult to interpret as the identities of a large proportion of pollen grains (often more than 50 per cent) are indeterminable.

From observations on local endemism, the location of very isolated populations, and the faunistic and floristic richness, it is likely that the most ancient forest sites in Malawi are situated in the Mulanje–Thyolo area in the south (at medium rather than high altitude) and on the Nyika and N Viphya Plateaux in the north. The escarpment forests from Mzuzu (Kaningina) and the S Viphya to the Lake-shore also harbour the local, isolated races of *Francolinus squamatus* and *Sheppardia gunningi*; these could have survived in rather secondary forest provided the understorey remained dense. It is puzzling that the S Viphya forests which are today so impoverished, are nevertheless inhabited by four montane passerines (*Alcippe abyssinica*, *Andropadus nigriceps*, *Phyllastrephus flavostriatus alfredi*, *Cossypha anomala*) which are all absent from the mature-looking Misuku forests. Moreover, two other species, *Apalis thoracica* and *Laniarius fuelleborni* are far more common and widespread on the Viphya than at Misuku. If the Viphya forests are older, then their present impoverishment has rather recent origins, almost certainly linked to man-induced fires which have left so many scars on this exposed plateau.

Faunistic differences between the Misuku Hills on the one hand, and the Mafinga–Jembya–Musisi forests on the other, indicate the directions of recolonization: the former were apparently recolonized from a refugium to the north (e.g. by *Andropadus masukuensis*, *Modulatrix stictigula*, *Batis mixta*, none of which occurs further south, and the race *murina* of *Apalis thoracica*), and the latter essentially from the south (by *Batis capensis* and the two bulbuls *Andropadus nigriceps* and *Phyllastrephus flavostriatus*, all three absent from the Misukus but common on the Nyika and Viphya mountains). The forest-woodland *Tauraco schalowi* is the only species in the Misuku forests that is unlikely to have come from the north, since it is replaced on the Tanzanian side of the Songwe River by *T. livingstonii*; but it could have survived in the general area in habitat other than rain forest. Finally there is the one specimen of *Apalis thoracica murina* collected by Benson in the Mafingas, either a stray individual or a member of a tiny population not recently located; in any case, its origin was from the north. The failure of *Apalis thoracica* to establish itself in the Mafinga–Jembya–Musisi forests could be related to the local abundance of its closest relative, *A. cinerea*, which may have got there first.

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APPENDIX 1. Taxonomic comments

Pycnonotidae

Following White (1962) and Hall & Moreau (1970), East African *Andropadus* (*tephrolaemus*) *nigriceps* has usually been considered conspecific with nominate *A. tephrolaemus* of the Cameroun–Gongola highlands. A recent field study of the latter, including its vocalizations, supports recognition of two distinct species. Song and other vocalizations of the more brightly coloured *A. tephrolaemus* bear no resemblance to those of *nigriceps*, but both plumage and voice suggest a closer relationship to another East African montane bulbul, *A. masukuensis*, a view already expressed by Stuart (1986). Full details of voice description and playback experiments will be published elsewhere.

Phyllastrephus (*fischeri*) *placidus* has two close relatives, *cabanisi* and nominate *fischeri*, and may be conspecific; vocalizations of the first two are extremely similar (Dowsett & Dowsett-Lemaire 1980), and playback experiments of *cabanisi* song to three pairs of *placidus* in the Misuku Hills elicited strong reactions. The song of nominate *fischeri* (from coastal forest in East Africa) is not yet described. The taxonomic status of *placidus* requires further study but, chorologically, this form is treated separately as a Montane endemic.

Nicator gularis of eastern and south-central Africa may be conspecific with its sibling *N. chloris* of the Guineo-Congolian rain forest (Hall & Moreau 1970). Keith (*in* Keith & Gunn 1971) believes some of their vocalizations differ but does not present the song of *N. chloris*. Although the full song of *chloris* has fewer notes and is more slowly delivered, the timbre and accentuation remain very similar to those of the song of *gularis*. Three individual *gularis* in Malawi reacted to playback of *chloris* song (by falling silent during playback and resuming song as soon as it was over), and three individual *chloris* in Nigeria reacted as strongly to tapes of *gularis* as to their own song (i.e. playback elicited song of silent birds, and searching behaviour within a few metres of recorder). More playback experiments are desirable.

Sylviidae

Bradypterus mariae, of south-central and East Africa, is considered conspecific with its sibling *B. lopezi* of the Cameroun mountains, on the basis of vocal similarities (Dowsett & Stjernstedt 1979, Dowsett-Lemaire & Dowsett 1989).

Muscicapidae

The *Batis capensis* superspecies comprises four forms (*capensis*, *margaritae*, *mixta*, *diops*) treated as full species by Hall & Moreau (1970), but as groups of races by White (1963); and *B. fratrum* (including the race *ultima* placed by White in *B. mixta*) is also closely related. I now have tapes of songs and calls of all forms except *diops*: with the

possible exception of *B. capensis* and *margaritae*, these forms appear to behave as good species. In its vocal characters (song of slow, widely-spaced monotonous whistles, curious nasal calls of females) *B. mixta* is much closer to *fratrum* than to *capensis*. The race *dimorpha* of the Malawi mountains (except Misuku) was placed in *B. mixta* by Hall & Moreau (1970); from extensive field studies in Malawi, *dimorpha* obviously belongs to *B. capensis* (as already stated by Dowsett & Dowsett-Lemaire 1980) but the Misuku birds clearly belong to another species, i.e. East African *mixta*—they react to their own song and to that of other *mixta* birds of Tanzania and coastal Kenya, but never to *capensis* songs from nearby Nyika Plateau. Conversely, *capensis* from Nyika reacts to its own fast-delivered whistling song, even to that of *B. margaritae*, but never to songs of Misuku *mixta*. Full details of sonograms and playback experiments will be presented elsewhere.

APPENDIX 2. Gazetteer of localities not in Benson & Benson (1977), and corrections

Locality	Co-ordinates (degrees, minutes)
Chamambo (South Viphya)	11°51S, 33°51E
Chimbia Hill (Kirk Range)	15°06S, 34°36E
Chinthembwe Mission (Ntchisi)	13°26S, 33°59E
Chisongeli Forest (Mulanje)	16°01S, 35°43E
Choma Mt (North Viphya)	11°17S, 34°03E
Chowo Forest (Zambian Nyika)	10°35S, 33°41E
Esperanza (Mulanje)	16°01S, 35°31E
Igembe Hill (see under Yembe in Benson & Benson)	
Jembya Plateau	10°09S, 33°28E
Kalwe (Nkhata Bay)	11°36S, 34°15E
Kaningina Hills (Mzuzu)	11°28S, 34°05E
Kawandama (South Viphya)	12°01S, 33°51E
Kuwilwe (see under Kurirwi and Kuwirwe in Benson & Benson)	
Lisau Saddle (see under Chiradzulu Mt in Benson & Benson)	
Luweya River (Chintheche) (lower part)	11°40 to 11°46S, 34°04 to 34°09E
Machemba Hill	15°43S, 35°38E
Mapalamba Hill (Namizimu)	13°58S, 35°17E
Mauze Hill	15°42S, 35°50E
Mchese Mt (Mulanje)	15°48S, 35°42E
Mzuma (Chintheche)	11°46S, 34°08E
Nansadi (Namzadi in Benson & Benson, where located incorrectly)	15°55S, 35°07E
Nkhonjera Hill (Nyika)	10°54S, 33°48E
Nkuwadzi (Nkhata Bay)	11°42S, 34°15E
Nsambi (Kirk Range)	15°15S, 34°37E
Nthungwa (South Viphya)	11°40S, 33°50E
Rumphi Gorge (see under Njakwa in Benson & Benson)	
Ruo Gorge (Mulanje)	15°57S, 35°38E
Thyolo tea estates	15°59 to 16°02S, 35°04 to 35°08E

APPENDIX 3. Distribution of montane birds of grassland (G) or secondary growth and forest edges (FE) in Malawi, showing southern limit of range ('/')

Bird species	Misuku	Nyika	N Viphya	S Viphya	Dedza–Chongoni	Kirk Range	Zomba	Mulanje	Thyolo
Accipiter rufiventris (G)	.	x	.	x	.	.	.	.	.
Francolinus levaillantii (G)	.	x	.	.	.	.	.	.	.
Coturnix coturnix (G)	.	x	x	x	x	x	x	x	.
Sarothrura affinis (G)	.	x	x	x	.	.	.	x	.
Streptopelia lugens (FE/G)	x	x/	.	.	.	.	.	.	.
Caprimulgus poliocephalus (FE/G)	x	x	x	x/	.	.	.	.	.
Hirundo atrocaerulea (G)	x	x	x	x	.	x	x	x	.
Psalidoprocne albiceps (FE)	x	x	x	x/	.	.	.	.	.
Cossypha caffra (FE)	x	x	x	x	x	x	x	x	.
Bradypterus cinnamomeus (FE)	.	x	x	.	.	.	.	x/	.
Parisoma lugens (FE)	.	x	.	.	x	x/	.	.	.
Cisticola nigriloris (FE/G)	x	x	x/	.	.	.	.	.	.
C. njombe (G)	.	x/	.	.	.	.	.	.	.
C. lais (G)	x	x	x	x	x	x	x	x	.
C. ayresii (G)	.	x	.	.	.	.	.	.	.
Melaenornis chocolatina (FE)[a]	x	x	x	x	x/	.	.	.	.
Onychognathus tenuirostris (FE/G)	.	x	.	x/	.	.	.	.	.
Nectarinia afra (FE)	.	x	.	.	.	.	.	.	.
N. famosa (*Protea* G)	x	x	x	x	.	.	.	.	.
N. johnstoni (*Protea* G)	.	x/	.	.	.	.	.	.	.
N. kilimensis (FE/G)	x	x	x	x	x	x	.	.	.
Ploceus baglafecht (FE)	.	x/	.	.	.	.	.	.	.
P. bertrandi (FE)	x	x	x	x	x	x	x	x	x/
Euplectes psammocromius (G)	.	x/	.	.	.	.	.	.	.
Estrilda melanotis (FE/G)	x	x	x	x	x	x	x	x	x
Serinus canicollis (FE/G)	x	x	x	x	.	.	.	.	.
S. citrinelloides (FE/G)[b]	x	x	x	x	x	x	x	x	x/
S. striolatus (FE)	.	x	x	x/	.	.	.	.	.

[a] Reaches southern limit on Chirobwe Mt.
[b] Reaches southern limit in the Malawi Hills, south of Thyolo.

they must be clearly written, and sent in duplicate too. Both English and scientific names of birds should be given when the species is first mentioned, thereafter only one name should be used; they should be those of a stated work and any deviations from this work should be noted and reasons given. Metric units should be used. Contributions will be welcomed on floppy disk—please contact the Editor for details.

Original black and white photographs and line illustrations should not be larger than A4 (210 x 297 mm). Line illustrations should be on good quality white paper or board, or on tracing material; lettering should be of professional quality or marked lightly in pencil. Each illustration should be numbered (Fig. 1, etc.) and be provided with a legend typed on a separate sheet of paper. All references cited should be listed at the end of the contribution following the form used in this issue. *Names of periodicals must be given in full and, in the case of books, the town of publication and the publisher should be given.*

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Contents

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Continued inside back cover

THE SEPARATION OF REED WARBLERS *ACROCEPHALUS SCIRPACEUS* AND MARSH WARBLERS *A. PALUSTRIS* IN EASTERN AFRICA

D.J. Pearson

The criteria of plumage, wing structure and song on which adult Reed Warblers and Marsh Warblers may be separated are well documented in Europe (e.g. Williamson 1963, Atkin *et al.* 1965, Dowsett & Dowsett-Lemaire 1979, Dorsch 1981, Svensson 1984). During passage through the Middle East, however, and in autumn and winter quarters in Africa, the Marsh Warbler occurs together with large eastern Reed Warblers, mostly of the paler race *fuseus*. Because of this geographical variation in size and colour in the Reed Warbler, and also because of the problems posed by first autumn birds (Williamson 1963, Crudass & Devlin 1963, Atkin *et al.* 1965), the separation of the two species deserves further discussion. The difficulties of identifying Reed Warblers in southern Africa have recently been stressed by Komen (1988). This paper examines the usefulness of various criteria for separating birds in the hand, based on observations in Kenya, Uganda and Sudan. The question of field identification is considered more briefly.

METHODS

Since 1966 large numbers of both species have been caught for ringing in Kenya and Sudan, and also many Reed Warblers in Uganda. Many birds have been assigned without difficulty on the basis of plumage, but it has often been necessary to check structural details to confirm identification. Various wing, bill and/or foot measurements were taken by the author (in addition to routine wing-length) on over 650 Marsh Warblers and 600 Reed Warblers to try to establish the most useful structural separation criteria.

Wing-lengths were flattened chord measurements made to the nearest millimetre (Spencer 1972).

Other wing measurements, taken to the nearest 0.5 mm, were second primary inner web notch depth (n) and tenth primary shortfall (x), both shown in Fig. 1. The position of the second primary tip and inner web notch relative to the tips of other primaries on the closed wing were also noted. Numbering of the primaries is from the outermost inwards.

Bill dimensions: Length was measured from the tip to the rear of the nostril, and width across the rear of the nostril (Fig. 1b), both measurements being taken with callipers to the nearest 0.1 mm.

Inner footspan, the distance from the rear of the hind toe to the front of the inner toe on the flattened foot (here excluding claws) was taken to the nearest 0.5 mm. First the inner toe and then the hind toe were fully straightened, but not stretched, along the edge of a rule as shown in Fig. 1c, the middle and outer toes lying just behind the rule.

Statements in the text not supported by references or tabulated data are based on the author's own observations.

CRITERIA FOR SEPARATION IN THE HAND

Plumage wear

Reed Warblers wintering in eastern Africa renew their whole plumage there, most between October and December/January, but a few on or south of the equator between

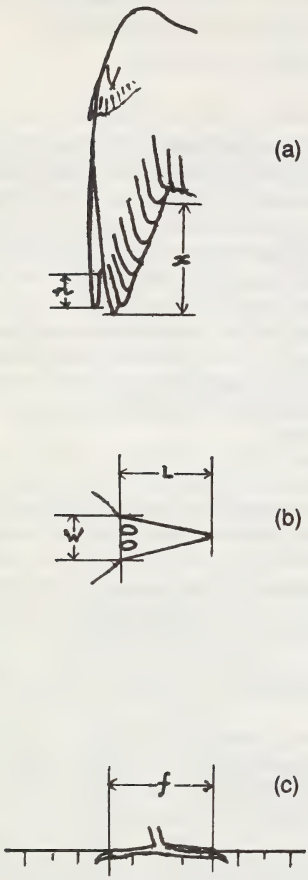

Fig. 1. *Diagrams showing measurements mentioned in the text.*

December/January and March (Pearson 1973, 1982). Most are already slightly worn on spring passage. Adults have some post-nuptial moult, for some show new plumage in Sudan in September. First autumn birds appear fresh at this time. However, prior to the main moult, adult and first autumn birds appear generally worn by November/December.

Marsh Warblers renew their whole plumage late in their stay in Africa (Hanmer 1979, Dowsett-Lemaire & Dowsett 1987). Thus, they still have blackish primaries with unworn tips on spring passage. In August/September, adults reaching Sudan show little sign of post-nuptial moult. However, an extensive partial moult occurs in Ethiopia in September/October, and adults on renewed migration through Kenya in November/December have fresh body and head plumage contrasting with worn, greyer looking wings and tail (Pearson & Backhurst 1976). First autumn birds are very fresh-looking in Sudan in September, but many are already quite worn by November, though (in contrast to adults) with the body plumage uniform with the wings.

Thus, plumage wear can help identify adult birds. In April–May, Marsh Warblers are more fresh-looking than Reed. In September, many Reed (but few Marsh) show a contrast between worn wings and newer body plumage. A similar but more pronounced contrast is shown by adult Marsh in November/December, by which time it is no longer noticeable in Reed.

Plumage colour

In freshly moulted Marsh Warblers the upperparts are rather uniform olivaceous brown with a slight greenish tinge. The underparts are washed with yellowish buff, most strongly on breast and flanks, and the creamy white throat presents a paler contrast. The wing feather edgings are uniform with the mantle, those of the tertials contrasting strongly with dark feather centres. There is little racial variation except that birds from the south-eastern extremity of the range (separated as *laricus* by Portenko (1955)) are slightly paler and greyer. Some 10 per cent of Kenya spring passage birds are distinctly more greyish green above and paler creamy below, and are presumably from this population.

Some 25 per cent of the Reed Warblers caught in Kenya and Uganda appear to be nominate birds. In fresh plumage (December–May) these are warm brown above. The

flanks and sides of the breast are suffused warm buff, but the rest of the underparts are whiter than in Marsh, without the yellowish tinge. The tertials are less bright, with the edges less well demarcated. The majority of East African birds, however, are typical *fuscus*, olivaceous brown above with a warm tinge confined to the rump and upper-tail coverts, a greyish tone to the nape and crown and whiter underparts than nominate birds. Some freshly moulted *fuscus* lack warmth in the plumage entirely, and are identical to Marsh above (and in head colour and face pattern), although whiter below. A few East African birds—perhaps 5 per cent—are uniformly greyish brown above, similar to *laricus* Marsh. In general, freshly moulted Reed are whiter below than Marsh, and most are distinguishable by a warm colouration above, at least on the rump. Colour distinctions are less useful in worn adults in early autumn, but the new body plumage of Marsh in late autumn is similar to the spring plumage, so that adults are again separable by their greenish tinged upperparts and yellow-buff underparts.

The plumage of first autumn Marsh Warblers is similar above and below to that of fresh adults, but rather brighter. Many have a warm gingery tinge to the whole upperparts, or at least the rump and uppertail coverts. This tends to wear off, but was noted on about 30 per cent of young birds on the Sudan coast in September and about 20 per cent examined in Kenya in November. This bright tone is commonly quite striking in early autumn on the wings, especially the tertials, greater coverts and primary edges. As in adults, the tertial fringes contrast strongly with dark centres. Young Reed are generally duller than Marsh, tinged rusty rather than gingery, but separation on upperpart colour may be difficult. However, they lack the yellowish underpart tinge of most young Marsh, and the tertial fringes are less contrasting.

Wing-length and structure

Measurements taken in eastern Africa (summarized in Table 1) show that wing-length is practically the same in the two species and cannot assist in identification. This is different from the situation in Europe, where Reed is a smaller bird (e.g. 67 adults in Britain averaged 64.2 mm, range 61–68 mm (author's obs.), and Dorsch (1981) gives a mean of 66.4 mm, range 61–71, for 393 East German adults). Here, Reed often measure less than 63 mm—the bottom of the Marsh range. A very few small Reeds (61–62 mm) have been found on the Sudan coast, but none in Kenya or Uganda.

The Reed Warbler tends to have a slightly more rounded wing than Marsh. The tenth primary shortfall is usually less (see Table 2) and the second primary shortfall greater (Table 3). However, these distinctions can only form a basis for identification in a few extreme cases. A more useful character, which has often been stressed in the literature (e.g. Williamson 1963, Svensson 1984) is the depth and position of the second primary inner web notch. Notch depth is typically greater in Reed than in Marsh (Table 4), and this measurement does separate many adult birds in East Africa, those measuring above 11 mm being Reed, and those less than 10.5 mm Marsh. However, notch depth is less in young Reed Warblers than in adults, so that many young birds fall into a region of overlap.

The position of the notch relative to the primary tips on the closed wing depends both on notch depth and wing roundedness. Although slightly subjective, 'notch position' thus provides a rather better separation than notch depth (Table 5). It must, however, be interpreted in conjunction with age, and primary wear should also be taken into account. In spring adults, the notch position of the two species barely overlaps at the tip of the ninth primary, but nearly all birds can be assigned. In autumn adults, with the primary tips worn, the notch falls slightly higher, and overlap is now between the tips of primaries eight and nine (those with notch equal to P9 being fairly safely Reed). In first autumn Reeds the

Continued on p. 85

Table 1. *Wing-lengths of Reed Warblers* Acrocephalus scirpaceus *and Marsh Warblers* A. palustris *in eastern Africa. Mean ± S.D. are given for the number of birds in parentheses*

Reed Warbler				
Sudan/Kenya/Uganda	Ad	67.6 ± 8.0	61–73	(137)
Unmoulted, Aug–Dec	1Y	67.0 ± 1.9	61–73	(136)
Kenya/Uganda				
Moulted, Jan–Apr		68.3 ± 2.1	64–76	(533)
Marsh Warbler				
Kenya	Ad	68.4 ± 1.7	64–73	(384)
Unmoulted, Nov–Dec	1Y	67.9 ± 1.7	64–73	(488)
Kenya				
Moulted, Apr		69.6 ± 2.0	65–73	(77)

Table 2. *Tenth primary shortfall (distance from tip of P10 to the tip of the closed wing) in Reed Warblers* Acrocephalus scirpaceus *and Marsh Warblers* A. palustris *caught in Kenya and Uganda. Ranges are given (measurement in mm) for the numbers of birds indicated.*

Reed Warbler			
Kenya/Uganda	Ad	22	13–16
Unmoulted, Nov–Dec	1Y	36	13–17
Kenya/Uganda			
Moulted, Jan–Apr		131	12–17
Marsh Warbler			
Kenya	Ad	50	15–18
Unmoulted, Nov–Dec	1Y	36	15–18

Table 3. *Position of the second primary tip relative to the tips of other primaries on the closed wing of Reed Warblers* Acrocephalus scirpaceus *and Marsh Warblers* A. palustris *caught in eastern Africa. Numbers in each category are given.*

Tip of P2 falling at:		>P3	=P3	P3–4	=P4	PP4–5	=P5	PP5–6
Reed Warbler								
Sudan/Kenya	Ad	–	–	7	24	59	4	1
Unmoulted, Aug–Dec		–	4	6	21	3	1	
Kenya/Uganda								
Moulted Jan–Apr		–	–	6	33	194	22	10
Marsh Warbler								
Kenya	Ad	3	32	57	18	7	–	–
Unmoulted, Nov–Dec	1Y	1	18	151	55	43	–	–
Kenya								
Moulted, Apr		–	1	22	21	5	–	–

Table 4. *Second primary notch depth (mm) of Reed Warblers* Acrocephalus scirpaceus *and Marsh Warblers* A. palustris *caught in eastern Africa. Means ± S.D. and ranges are given for the number shown in parentheses.*

Reed Warbler				
Sudan/Kenya	Ad	11.9 ± 0.7	10.5–13.5	(72)
Unmoulted, Aug–Dec	1Y	10.9 ± 0.7	10.0–12.5	(17)
Kenya				
Moulted, Jan–Apr		12.2 ± 0.7	10.5–14.0	(117)
Marsh Warbler				
Kenya	Ad	9.0 ± 0.7	7.5–11.0	(36)
Unmoulted, Nov–Dec	1Y	9.1 ± 0.6	8.0–10.5	(55)
Kenya				
Moulted, Apr		9.5 ± 0.5	8.5–10.5	(19)

Table 5. *Position of second primary notch relative to tips of other primaries on the closed wing of Reed Warblers* Acrocephalus scirpaceus *and Marsh Warblers* A. palustris *caught in eastern Africa. Numbers in each category are given.*

Notch falling at primary position:	=6	6/7	=7	7/8	=8	8/9	=9	9/10	=10	10/ss	=ss
Reed Warbler											
Sudan/Kenya/ Uganda Ad	–	–	–	–	–	7	14	16	29	16	1
Unmoulted, Aug–Dec 1Y	–	–	1	3	3	12	11	12	6	6	–
Kenya/Uganda Moulted Jan–Apr	–	–	–	–	–	2	9	59	98	247	23
Marsh Warbler											
Kenya Ad	7	26	48	57	15	1	1	–	–	–	–
Unmoulted, Nov–Dec 1Y	3	34	91	169	44	20	1	–	–	–	–
Kenya Moulted, Apr	–	1	6	26	15	5	1	–	–	–	–

notch may fall as high as the eighth, and exceptionally the seventh primary tip, so that again many young birds of either species are unidentifiable on this character alone.

Birds moulting in eastern (or southern) Africa during January–March may be impossible to identify from plumage colour and notch position. In these, bill and foot measurements may be crucial (see below).

Bill measurements

The bill is rather differently proportioned in the two species, averaging longer and narrower in Reed than in Marsh (Fig. 2). The length difference is not readily apparent from conventional measurements to base of skull or feathering (see Williamson 1963,

Svensson 1984, for example), but seems to be more so in careful measurements to the rear of the nostril (Table 6). Length alone serves to identify many individuals of both species in East Africa, but a better index is provided by the length/width ratio. This overlapped at values of 2.3–2.4 with 78 per cent of Reed above this range and 73 per cent of Marsh below. Alternatively, the value of length minus twice width (L – 2W) can be used. Overlap was found at values of 1.5–1.9, with 92 per cent of Reed above this range and 83 per cent of Marsh below. This last criterion is similar to the 'Wallinder Index' suggested by Svensson (1984), but the latter incorporates tarsus width in addition to bill length (to skull) and width (as defined here). Tarsus width differs little in the two species (44 Reeds in Sudan averaged 1.82 mm (range 1.7–2.0 mm) and 80 Marsh 1.92 mm (1.7–2.1)), and considering the precision required in its measurement, its involvement probably decreases rather than increases the species separation obtainable by general use of the Wallinder Index. Bill length minus twice width, as defined above, is simpler and more precise to determine, and may give more satisfactory separation, in Europe as well as in Africa. It should be realized, however, that neither this formula nor the Wallinder Index would work satisfactorily with young juveniles, which have shorter and wider bills than adults (pers. obs.).

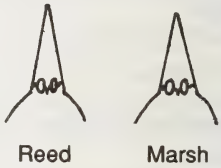

Fig. 2. *Diagram of the bills of the two species from above.*

Inner footspan

Reed Warblers have larger feet than Marsh (Leisler 1972). Leisler reported a complete separation of the inner footspan measurement of Reed and Marsh Warblers in central Europe, but Dorsch (1981) found considerable overlap in an East German study. Inner footspan (excluding claws) was checked in Kenyan birds (Table 7). Marsh Warblers ranged 16.0–18.5 mm, and Reed 17.5–21.0 mm; 65 per cent of Reed fell above the overlap region while 43 per cent of Marsh were below it. This measurement alone, though not as good as bill measurement, does identify many birds. In any case it usually gives a good additional indication independent of wing or bill structure.

Soft part colour

Marsh Warblers tend to have paler legs than Reed, usually said to be pinkish straw or pale horn. However, in almost 40 per cent of the Marsh checked at Ngulia, Kenya, the legs were dark brown. Reed typically have dark legs tinged greenish or purplish grey, but in some birds they are pale. This character seems, therefore, to be of little use in separation.

Mouth colour is yellowish-orange in Marsh Warblers as compared with a deeper orange in Reed. However, there does seem to be variation, and it is difficult to judge colour precisely in an individual bird, so that again, this is a character of limited use, even in the hand (see also Harvey & Porter 1984, Kelsey 1985).

SUMMARY

The separation of Reed and Marsh Warblers in the hand in eastern Africa can often be based on plumage colour and wear alone, especially in spring adults. First autumn birds are usually separable on plumage when fresh, but less readily in late autumn, when worn. Adult Marsh are quite distinctive after the autumn body moult. Three additional useful

Table 6. *Bill length from rear of nostril to tip (L), width across rear of nostril (W), length to width ratio, and length minus twice width in Reed Warblers* Acrocephalus scirpaceus *and Marsh Warblers* A. palustris *caught in Kenya (measurements in mm). Ranges are given for the numbers indicated. Samples include adults and first year birds.*

	n	L	W	L/W	L–2W
Reed Warbler	139	9.9–12.5	3.7–4.8	2.3–3.1	1.5–4.3
Marsh Warbler	153	8.8–11.0	4.0–5.1	2.0–2.4	–0.2–1.9

Note: only 17/139 Reed Warblers had bill length <10.5 mm; only 12/153 Marsh had bill length >10.5 mm.

Table 7. *Inner footspan (mm) of Reed Warblers* Acrocephalus scirpaceus *and Marsh Warblers* A. palustris *caught in Kenya. Means ± s.d. and ranges are given for the number of birds shown in parentheses.*

Reed Warbler	19.0 ± 0.7	17.5–21.0	(121)
Marsh Warbler	17.4 ± 0.6	16.0–18.5	(139)

Note: only 1/121 Reed Warblers measured <18 mm; only 8/139 Marsh measured >18 mm.

identification checks seem to be available, any one of which may be conclusive. These are:

1. Second primary notch position. This separates practically all adults. Birds with notch below the tip of P9 will be Reed; notch equal to or above the tip of P8, Marsh. In first autumn birds, only those with notch below P9 (Reed) or above P7 (Marsh) should be assigned.

2. Bill length/width ratio. This identifies most birds. A ratio of 2.5 or above indicates Reed; 2.2 or below, Marsh. Alternatively, a value for (L – 2W) of 2.0 mm or above indicates Reed; 1.4 mm or below, Marsh.

3. Inner footspan. This separates many birds. A measurement of 19 mm or above indicates Reed; 17 mm or below, Marsh.

FIELD IDENTIFICATION

The separation of Reed and Marsh Warblers in the field depends on subtle features of plumage and jizz, and on voice. It has been much discussed with regard to the situation in Europe (Atkins *et al.* 1965, Wallace 1978, Dowsett & Dowsett-Lemaire 1979, Grant 1980, Pearson 1981, Harvey & Porter 1984). Here, the olivaceous appearance of adult Marsh as opposed to the warm look of Reed can be readily appreciated in the field. Marsh appears generally paler and more uniform above, accentuating the contrast shown by the dark tertial centres (M.G. Kelsey pers. comm.), while in Reed, the darker cap contrasts more strongly with the white throat. In autumn, the situation is complicated in adults by plumage wear, and many young Marsh are warmly tinged above. However, birds which

are clearly greenish above or yellowish below should be identifiable as Marsh.

In eastern Africa (and parts of the Middle East) the preponderance of *fuscus* Reed poses a further problem. Even in fresh plumage, these look similar in colour to Marsh above, and at least as pale on the head, and the warmer rump may not be obvious. The yellower underparts of Marsh, and the pale throat, contrasting against the deeper tinged breast, provide the best plumage features; the underparts of *fuscus* are particularly white.

Dowsett & Dowsett-Lemaire (1979) have stressed the rather less attenuated head and slightly shorter, stouter bill of Marsh, giving a subtly different profile, more like that of a *Hippolais* warbler, and this is re-emphasized by Komen (1988). With the crown feathers raised, the forehead of Marsh can look particularly steep. Other features of jizz and carriage have been variously commented upon. Marsh is a little more compactly built, less slender than Reed, and has been described as looking 'heavy bodied' and 'plump bellied.' M.G. Kelsey (*in litt.*) comments that on the breeding grounds Marsh tends to move through vegetation somewhat more heavily than Reed.

In Africa, head shape may be useful but it could rarely be taken as the sole basis for identification. In sleek postures, with feathers flattened, the head of Marsh can look as attenuated as in typical Reed. It is difficult to appreciate any consistent difference in build or carriage, especially in view of the large changes of fat content to which both species are subject. Harvey & Porter (1984) suggest that Marsh tends to perch more upright, but it usually forages, like Reed, with a horizontal carriage, the tail held level with the body line. The relatively long 'primary projection' of Marsh, with more widely spaced tips (Wallace 1978), is again not a feature of any value in the field, for the difference in wingtip structure of the two species is slight to non-existent. Many of these characters of jizz are probably only distinctive when, as during breeding, they are associated with particular displays and behaviour.

The best field distinction is provided by voice. The prolonged rapid warbling full song of the Marsh Warbler, with its silvery quality, high liquid trills and extensive imitative repertoire (Dowsett-Lemaire 1979) is unmistakable. Full Marsh Warbler song may be heard in birds which have broken their migration in Kenya in November/December, and is increasingly common in Africa from January to early April (Dowsett-Lemaire 1981, M.G. Kelsey pers. comm.). Reed Warblers produce their typical rhythmic song in Africa, usually somewhat subdued, from late November to early April. The commonest call of Marsh is a harsh *churrr*, slightly more buzzy and less grating than the similar note of Reed, and often introduced by a hard consonant, *t-churrr*. A chattering *ch-ch-ch-* is also common, and a hard *teck*, like the call of a *Hippolais* or *Sylvia*. The author has not knowingly heard this hard call given by a Reed Warbler in Africa.

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THE PRESENT SITUATION REGARDING THE ENDEMIC BREEDING BIRDS OF ETHIOPIA

J.S. Ash and T.M. Gullick

We visited Ethiopia from 7 February until 17 March 1989, one objective being to attempt to identify any immediate threats affecting the endemic birds of the country. Of Ethiopia's 28 endemic breeding species, we saw all except one, but some were seen so briefly that no realistic assessment could be made of their present status. Except for a short visit to Lake Tana, only the country south of 10°N and east of 37°E was visited.

One of us (Ash) had been resident in Ethiopia in the past (1969–1977) and was familiar with the country and the status and distribution of its birds. It is against this background that qualitative judgements have been made on factors affecting them. In the past 10–12 years more ecological changes must have taken place in Ethiopia than in any period of similar duration throughout its history. There were periods of prolonged drought in several regions, widespread warfare, severe food shortages, major changes in agricultural procedures—notably in the formation of state farms and peasant associations—and major shifts in population from drought-stricken areas to Resettlement Areas elsewhere. Often undertaken under emergency conditions, little (if any) regard has been paid to the possible ecological side-effects of these activities. Compounding the many problems which must be arising is apparently a major growth in population (unless the population shift has been even greater than was thought). An immediate impression at the height of the dry season when we were there was that a population of people had moved out of one part of the country which had become partly almost uninhabitable through habitat degradation, to repeat the procedure elsewhere. The development of state farms, the system of 'villagization', the settlement of nomads, the translocation of large groups of people, are practices almost certain to cause such ecological degradation.

The effects of such changes on birdlife could be great, and most of them harmful. Forest species are most likely to be adversely affected, but those confined to restricted areas (e.g. in wetlands or bushland) can be severely disturbed by a single isolated event such as the formation of a state farm or military training area.

From Table 1, with the probable exception of Prince Ruspoli's Turaco *Tauraco ruspolii*, no other Ethiopian endemic bird is under immediate threat, and over half of them are apparently unaffected.

Table 1. *Recent changes in status of endemic birds in Ethiopia (1989 compared with 1975)*

Category	n	Approx %
a. Status apparently unchanged	15	54
b. Numbers possibly reduced	6	21
c. Numbers apparently reduced	2	7
d. Numbers certainly reduced	1	4
e. Numbers apparently increased	1	4
f. Unknown	3	11
Number of endemic species	28	

Notes:

a. Wattled Ibis *Bostrychia carunculata*, Blue-winged Goose *Cyanochen cyanoptera*, White-collared Pigeon *Columba albitorques*, Yellow-fronted Parrot *Poicephalus flavifrons*, Banded

Barbet *Lybius undatus*, White-tailed Swallow *Hirundo megaensis*, White-winged Cliffchat *Myrmecocichla semirufa*, Rüppell's Chat *M. melaena*, Abyssinian Catbird *Parophasma galinieri*, White-backed Black Tit *Parus leuconotus*, White-throated Seedeater *Serinus xanthopygius*, Salvadori's Seedeater *S. xantholaema*, White-billed Starling *Onychognathus albirostris*, Black-headed Forest Oriole *Oriolus monacha*, Thick-billed Raven *Corvus crassirostris*

b. Harwood's Francolin *Francolinus harwoodi*, Spot-breasted Plover *Vanellus melanocephalus*, Golden-backed Woodpecker *Dendropicos abyssinicus*, Degodi Lark *Mirafra degodiensis*, Black-headed Siskin *Serinus nigriceps*, Stresemann's Bush Crow *Zavattariornis stresemanni*

c. Rouget's Rail *Rallus rougetii*, Abyssinian Longclaw *Macronyx flavicollis*

d. Prince Ruspoli's Turaco *Tauraco ruspolii*

e. Black-winged Lovebird *Agapornis taranta*

f. Sidamo Long-clawed Lark *Mirafra sidamoensis*, Yellow-throated Seedeater *Serinus flavigula*, Ankober Serin *S. ankoberensis*.

One major factor in the birds' favour in Ethiopia is that there is virtually no deliberate persecution by man. Much of this attitude, perhaps due as much to indifference as to beneficence, derives from religious beliefs, particularly on the part of the Christian half of the population. On the other hand, under the present situation in Ethiopia, there is very little chance of developing any sort of conservation programme unless it can be demonstrated clearly that it is of practical or economical value to the country. For example, little interest can be expected in conserving Prince Ruspoli's Turaco for its own sake, but a good argument can be made for conserving the forest in which it lives (and thus the bird also) on account of its value in terms of forest products, such as natural medicines, honey, firewood, building wood, water-holding properties, soil conservation, and for the genetic resources of the trees themselves.

The results of our survey are summarized under species below, in an order following Urban & Brown's 1971 *Checklist*.

COMMENTS ON SPECIES

***Bostrychia carunculata* Wattled Ibis**

Common and widespread with no indication of any reduction in numbers nor of any obvious threats.

***Cyanochen cyanoptera* Blue-winged Goose**

Common and widespread above 2000 m. No obvious change in distribution and status noticed, but intensified cultivation and grazing of highland wetlands and grasslands, combined with recent droughts, cannot be beneficial.

***Francolinus harwoodi* Harwood's Francolin**

An Appendix C (i.e. "near-threatened") species in the Red Data Book. The best known site, in the Jemma (= Jemmu) Valley (Ash 1978, Collar & Stuart 1985), was revisited on 12 February. In one area where a brood of young had been seen in 1977, there was an adult female with a brood of three young about 10 days old; not far away there was a single adult and a group of three adults together. First egg dates for the brood of young must have been in the week at the end of December/early January, which confirms the earlier conclusion of first egg dates in December (Ash 1978). Local inhabitants claimed that the birds are common for a long way up and down the river and that they are very good to eat. There

had been a considerable reduction in trees, low cover and of the *Typha* beds in the valley since 1977, and this trend is certain to continue. The francolins feed often on the cultivated land, but seem to prefer or require thick (*Typha*) cover to hide in. A suitable alternative may not exist on the steeper uncultivated slopes on which the species might otherwise seek sanctuary. Local information emphasized that the francolins in the valley bottom differed from those higher up the slopes, where *F. erckelii* and *psilolaemus* occur.

A re-examination of the descriptions of the birds from Gibé gorge and from near Dembidollo (*vide* Ash 1978) indicates that they cannot have been *harwoodi* and most probably belong to a race of *clappertoni*. Although lacking the pale supercilia of many *clappertoni*, the relatively heavy 'blobbing' on their underparts, together with a reduced amount of red on the mandibles strongly suggests this species. These populations require further investigation. The known distribution of *harwoodi* is therefore confined to an area of 150 x 64 km.

***Rallus rougetii* Rouget's Rail**
Previously a common and widespread species in highland areas. We saw extremely few in 1989, in areas in which previously they had not been uncommon, from which we concluded that the greatly increased grazing pressure in marshlands and along streams may have so depleted the vegetative cover that much of the habitat has become unsuitable.

***Vanellus melanocephalus* Spot-breasted Plover**
At a highland stream site near Muketuri where the species was seen often in the 1970s in numbers up to over 40, there were 60 birds on 12 February. None was seen near Chacha on 12 March where previously it occurred at the same time of the year in flocks of up to 150.

***Columba albitorques* White-collared Pigeon**
Common and widespread, and well adapted to man-made structures. No obvious population change noticed, nor threats identified.

***Poicephalus flavifrons* Yellow-fronted Parrot**
Seen in many areas and no noticeable changes noted.

***Agapornis taranta* Black-winged Lovebird**
Widespread and seen more often than in former years. Possibly this species has benefited from the reduction in roadside sales for the pet trade.

***Tauraco ruspolii* Prince Ruspoli's Turaco**
A Rare Threatened species in the Red Data Book, this turaco is probably now under greater threat than it had been in the 1970s. On 23 February we found that the best known forested site at Genale on the Genale River north of Negele (*vide* Collar & Stuart 1985) had been entirely replaced by a 'Resettlement Area' apparently involving over 2000 people. Further west up to 74 km along the road from Negele to Kibre Mengist, there was much forest degradation and increased human settlement compared with the last visit to the area by Ash in 1973. At 38 km south-east of Wadera no turacos were found in an area where there were several in 1973; although there was no obvious reduction in tree cover, there was heavy grazing by domestic animals and destruction of lower-level vegetation. At Wadera there was one *T. ruspolii* in sparsely scattered trees near the village, and 11 km away north-west several turacos were calling in an area of quite thick, but grazed, woodland. Next day at least nine *T. ruspolii* were in this area, including a group of four feeding in and flying between a group of widely scattered trees. The species is not confined to *Juniperus* nor, necessarily, thick undisturbed woodland. Nor is it (now) the "remarka-

bly secretive and elusive" species it was considered to be by Ash in Collar & Stuart (1985), for we found quite easily several birds which were not at all shy. We do not know what the present situation is further west along this road.

At two other potential sites we did not see any *T. ruspolii*: the *Juniperus* woodland just to the west of Yavello on 21 February; and the Arero area on 23 February where much of the *Juniperus* to the east and south had apparently been destroyed by recent fire. Some sparse woodland remained to the north but was not visited. North of the Genale area the large, relatively undisturbed Harenna Forest lies on the southern slopes of the Bale Mts. We surveyed four areas for birds at 1750, 2000, 2300–2450 and 2800 m on 5–7 March, but the only turacos seen were White-cheeked *T. leucotis*, which were common at the two lower and less so at the two higher levels (in earlier years this species had been seen lower down with *T. ruspolii* (Collar & Stuart 1985), but it was not seen there below 1750 m in 1989). Hillman (1986) in his survey in Harenna in 1986 had four records for *T. leucotis* but did not see *T. ruspolii* either.

At the present day in Ethiopia, forest destruction and degradation can be very rapid. It is therefore essential that a survey to assess the present status and distribution of *T. ruspolii* should be arranged immediately. Until more information is available a large block of forest round Wadera should be declared inviolate and the necessary law enforcement established to safeguard both the turacos and the arboreal genetic pool.

***Lybius undatus* Banded Barbet**
Widespread, and seen frequently, suggesting that its distribution and status have not changed greatly.

***Dendropicos abyssinicus* Golden-backed Woodpecker**
No obvious change noted in its status or distribution, although the replacement of much native woodland with eucalyptus must affect it eventually.

***Mirafra degodiensis* Degodi Lark**
An Insufficiently Known Threatened species in the Red Data Book. Birds considered to be this species were observed at the type locality (Erard 1974) at 11 km east of Bogol Manya on 27 and 28 February. Details are given in Ash & Gullick (in press, a).

***Mirafra* (*Heteromirafra*) *sidamoensis* Sidamo Long-clawed Lark**
An Indeterminate Threatened species in the Red Data Book. This was the only endemic species we failed to find in 1989. Erard's (1974) type locality at 2 km south of Negele had been cultivated and become unsuitable habitat for this species. At Ash's site (Ash & Olson 1985) the actual collecting area was found to be in the centre of a very large army training camp. Adjoining this there still remained extensive grasslands suitable for the species, although much is a special military training area. Permission was obtained to search this, but the only larks found in the extremely dry conditions prevailing at the time were flocks of Rufous Short-toed Larks *Calandrella* (*rufescens*) *somalica*.

***Hirundo megaensis* White-tailed Swallow**
A Rare Threatened species in the Red Data Book. No records are known since 1975 when seen by Ash in the Yavello/Mega area (Collar & Stuart 1985). We learned from Girma Zekarias, a bird-tour guide, that a number of people had sought the species unsuccessfully since. In 1989 we noted a total of 14 birds on 21 February along 35 km of the road to Mega from 15 km south of Yavello, and seven on 23 February at 29–38 km from Yavello on the road to Arero. The number of birds along the Mega road is of the same order as those recorded by Erard in 1971 (15–20 in 60 km from 20 km south of Yavello) (Collar & Stuart

1985). On the same stretch of road Ash saw 25 in January 1975. Our 1989 altitudinal range of 1600–1725 m agrees with Collar & Stuart's speculation that the species occurs at above 1500 m, well above the figures ranging between 1220 and 1520 m given by Benson (1942, 1946), Hall & Moreau (1962) and Urban & Brown (1971).

It was clear in 1989 that a number of changes had taken place in the area since 1975. In places bush had been cleared for cultivation, and at one locality a large village and settlement area had become established. There also seemed to be a large increase in the numbers of domestic animals grazing in the area, and the Southern Rangelands Development Project is established in the area lying to the east of that between Yavello and Mega. The Ethiopian Wildlife Conservation Organisation is establishing a field station at Yavello. Co-ordinated with this the Norwegian Government is funding a project through the University of Oslo on "Research on integrated wildlife management in Borana." It is urged that the opportunity should be taken to attach an ornithologist to this project to make a special study of the two local endemic birds, the White-tailed Swallow and Stresemann's Bush Crow. Two other endemics, Prince Ruspoli's Turaco and the Sidamo Long-clawed Lark, are not far away in the Negele area.

Most of the *H. megaensis* seen were close to culverts along the road, and most of these had parts of swallow nests adhering to the walls. They need to be investigated during the breeding season to identify the species involved. In the past *H. abyssinica* is the only species found breeding in such situations in that area.

***Macronyx flavicollis* Abyssinian Longclaw**
Far fewer examples of this species, previously considered to be common and widespread, were seen than were expected. Possibly their numbers have been reduced through an increase in cultivated land and a consequent increase in grazing pressure elsewhere.

***Myrmecocichla semirufa* White-winged Cliffchat**
***Myrmecocichla melaena* Rüppell's Chat**
***Parophasma galinieri* Abyssinian Catbird**
***Parus leuconotus* White-backed Black Tit**
All seen in a number of widespread localities and there was no suggestion that their numbers or distribution had been affected since 1975, for they could be found with approximately a similar degree of frequency as in the period prior to 1977.

***Serinus xanthopygius* White-throated Seedeater**
The species was seen at Bahar Dar and in the Jemmu Valley at the only two points where we entered its area of distribution. We have no reason to believe that its status or distribution have changed.

***Serinus flavigula* Yellow-throated Seedeater**
This species has not been seen for over 100 years. It was rediscovered in one of its original three collecting sites at Malca Ghebdu, where there were 7-plus, of which one was photographed by Mrs K. Gullick on 13 March (*vide* Ash & Gullick in press, b).

***Serinus xantholaema* Salvadori's Seedeater**
An Appendix C Near-threatened species in the Red Data Book. We saw a party of six on 4 March at Sof Omar, which is an area from which most previous records of this rare species have come. In this once remote gorge where only occasional local inhabitants were seen (in 1975), there were now hundreds of resettled people using its water—the only local supply at this time—for washing themselves and watering their livestock. As a result, practically all ground cover had been destroyed. It is not known to what extent

these factors may be affecting the birds, but the remarks in Collar & Stuart (1985) probably still apply: "though rare, is probably spread widely enough to be at no risk."

***Serinus nigriceps* Black-headed Siskin**
Although still common and widespread in highland areas, it appeared to be less numerous than formerly (1969–1977) on farmland. Possibly changes in farming practices have affected this species adversely.

***Serinus ankoberensis* Ankober Serin**
At least 60 birds were seen on 12 March, feeding in loose flocks close together on roughly terraced strips of sparse barley stubble among rocks and scattered scrub, just below the top of the eastern escarpment of the west highlands at 3000 m, 6.4 km north of Ankober. This seems to be only the second known sighting of this species since it was first recorded in 1976 (Ash 1979), the other being by J. Alamargot in 1981 (Collar & Stuart 1985) who found *c.* 50 in the same area on 19 January 1981. All records are from a narrow strip along the escarpment edge at around 3000 m at 3–8 km north of Ankober and are contained within an area of not more than 5 km^2. Alamargot (*loc. cit.*) also claims that observations at similar sites and altitudes in many other parts of Ethiopia have produced no record of this species. The present birds fed mostly on bare earth among scattered stones, and frequently flew up in their characteristic fashion to cling to near vertical banks and rocks. Calls heard at rest were a very sparrow-like soft *chirrup*, also rendered as a sparrow-like *witchu* and *weetchu*, and in flight a liquid *twi-ti-twi-twi*, which may have been a combination of notes from more than one bird, as well as a nasal *chirp*. Both a Brown-rumped Seedeater *S. tristriatus* and a Streaky Seedeater *S. striolatus* (their scientific names inadvertently transposed in Ash 1979) joined them as they fed.

A large increase in human activity in the area since 1977 has resulted in an increase in the area under cultivation, and much more grazing on the slopes by sheep, goats and cattle. At present this may actually benefit the birds unless it leads to erosion and destruction of the terrace banks in which the birds breed. We were surprised to be informed by a local inhabitant that a bird lived in the area which was found nowhere else in the world!

***Onychognathus albirostris* White-billed Starling**
***Oriolus monacha* Black-headed Forest Oriole**
***Corvus crassirostris* Thick-billed Raven**
No obvious changes in either distribution or status were noticed in any of these species, and they were found in pre-1977 sites in what were considered to be about similar numbers, as well as in new sites.

***Zavattariornis stresemanni* Stresemann's Bush Crow**
From 34 km north-east of Yavello, south to Mega and for up to 50 km east of Yavello on the Arero tract, 62 bush crows were noted on 20–21 and 23 February. They were most plentiful to the north and east of Yavello, although no particular search was made for them. None was seen along the track to the Sagan River to the north-west of Yavello on 22 February. At present the birds would not seem to be under any particular threat, but see the remarks under *Hirundo megaensis*.

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APPENDIX 1

Geographical co-ordinates of localities referred to in the text

Ankober	9°35N	39°45E	Kibre Mengist	5°53N	39°00E
Arero	4°45N	38°49E	Malca Ghebdu	9°32N	39°56E
Bahar Dar	11°36N	37°25E	Mega	4°05N	38°19E
Bogol Manya	4°31N	41°32E	Muketuri	9°33N	38°47E
Chacha	9°32N	39°28W	Negele	5°20N	39°35E
Dembidollo	8°32N	34°50E	Sagan River	5°10N	37°37E
Genalé	5°44N	39°32E	Sof Omar	6°54N	40°47E
Gibé gorge	8°14N	37°35E	Wadera	5°45N	39°20E
Harenna Forest	6°38N	93°50E	Yavello	4°54N	38°06E
Jemma Valley	9°58N	38°55E			

AN ORNITHOLOGICAL SURVEY OF KASYOHA–KITOMI AND ITWARA FORESTS, UGANDA

Paul Buckley and Alastair McNeilage

The forests of western Uganda (Fig. 1) are regarded by biologists as being among the most important for wildlife in Africa. They form the easterly extremes of the ranges of many West African species, and certain areas, most notably the Rwenzori mountains, have rare endemic species. These forests have recently been the focus for a World Wide Fund for Nature (WWF) Tropical Moist Forest conservation programme which included these 1987 surveys. The project also included primate censuses, habitat survey and threat assessment, and the results will be reported elsewhere (Howard in press). The avifaunas of most of these forests have been studied in the past, notably by the van Somerens and by a team from the Los Angeles County Museum led by Friedmann and Williams. New records for five forests, also assessed in 1987, are presented separately (Buckley, McNeilage & Walker 1989). In the case of two forests, Itwara and Kasyoha–Kitomi, ornithological records were, however, entirely absent. This paper reports the results of our survey work in these two forests.

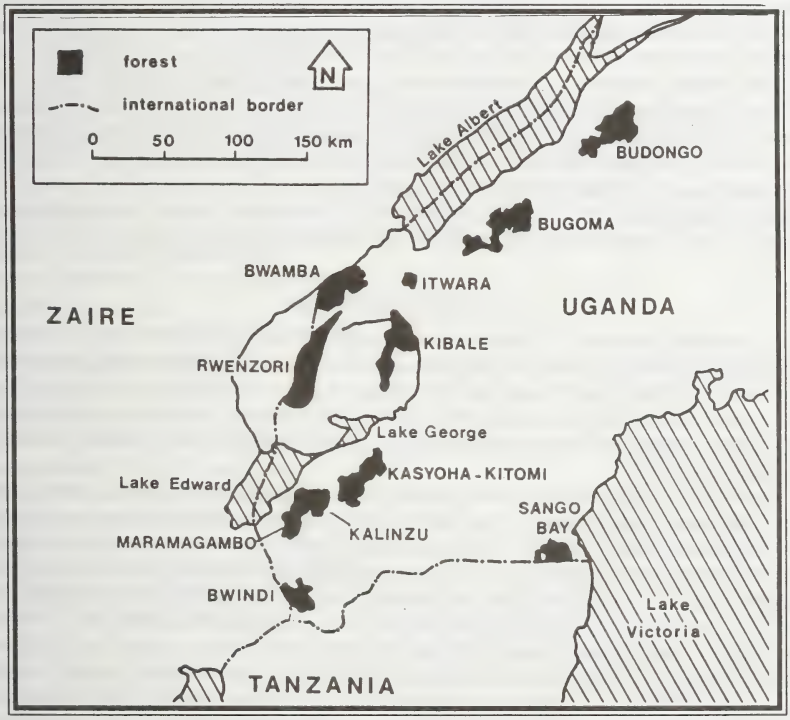

Fig. 1. *Sketch map showing the forests of western Uganda*

KASYOHA–KITOMI

This forest lies in Ankole province on rugged volcanic terrain at around 1500 m. It extends over 400 km² from 0°05 to 0°25S and 30°05 to 30°20E. The vegetation is classified as medium altitude moist evergreen forest in the south west, and medium altitude moist semi-deciduous forest in the north east (Ball 1968). The forest appears to be in a state of natural expansion, much of it being relatively young. This is probably due to climatic factors, but may also be a sign of a decrease in human population due to epidemics one to two centuries ago (Hamilton 1984). Inaccessibility has restricted exploitation of Kasyoha–Kitomi's timber resources. Currently, felling is limited to a few local pit-sawyers using hand tools. Plans have been vaunted for a saw mill in the north of the forest, and continued increases in surrounding rural populations threaten to become a problem. Hunting pressures are significant in some areas, but large tracts of largely undisturbed forest remain, which some animals are able to use as refuges. The authors studied Kasyoha–Kitomi from 5–23 September 1987 based near the village of Butoha on the western edge of the forest.

ITWARA

A small medium-altitude forest, covering about 87 km², of which 22 per cent is grassland. Itwara overlooks the western rift valley in Kabarole district at 0°45 to 0°52N and 30°25 to 30°32E. In Itwara inaccessibility has been less of a constraint, and a saw mill has been operating in the south west of the reserve since 1970. Much of the forest in this section has been heavily degraded. No attempt has yet been made to put into action a plan to use the areas of grassland for timber plantations to supply the saw mill which would alleviate some of the pressure on the natural forest. The small size and good accessibility of the forest mean that all parts of it are used by numbers of illegal pit-sawyers and hunters. No part remains as a refuge for ungulates which are the hunters' main targets, and several are probably approaching extinction (Howard 1986). The authors studied this area between 21 August and 4 September 1987, based at the sawmill in the south west of the forest.

SURVEY METHODS

Survey methods involved a combination of observation and mist-netting. The latter enabled the recording of many of the more secretive forest birds although many species are, of course, unlikely to be recorded by netting (see Bowden 1986). In employing both techniques we attempted to range over as many forest types as possible including forest edge, mature undisturbed forest, regenerating secondary forest, valley bottom, mid-slope and ridge-top forest.

Nets were generally sited in positions that were expected to catch as many individuals as possible, such as under thick cover. Some were also placed in more open areas such as under mature high forest and in a swamp, in case certain species were restricted to such areas. No attempt was made to site the nets in any systematic way. Thirteen nets were employed ranging from 6 m to 10 m long and totalling 125 m in length. Height varied from 2 m to 3 m, and they were usually placed with the bottom shelf close to the ground. Placing nets higher in the canopy was attempted but met with little success. Sampling was normally carried out from around 07:00 to 18:30 but nets were always furled with the onset of rain. Time was also lost in moving nets from one location to another—normally every two days since catches fell rapidly in any one position.

Observations were carried out in a similar way with time spent in a variety of habitats,

and a concerted effort made to look for species that had not been recorded previously but were considered likely to occur. The effectiveness of these two techniques is discussed further in Appendix 1.

Identification was largely by means of reference books, principally Mackworth-Praed & Grant (1955), plus advice from other workers and examination of specimens in the National Museum in Nairobi. A minimum of reference specimens were taken, principally of greenbuls, and these are now in that museum.

Records include some forest-edge and non-forest species recorded within the forest boundaries, for example from Lake Kamanzuke in Kasyoha and from the grassland compartments in Itwara.

The species recorded in each of these forests are listed in Table 1.

Table 1. *Species observed and netted in Itwara and Kasyoha–Kitomi forests*

This table lists by family, all the species recorded in the two forests. Order and nomenclature follows Carswell & Pomeroy (1984). Abbreviations used are as follows: column headings:

O—Observation: a subjective index (a–e) of abundance based on observation is given:
- a Abundant, and seen or heard almost continuously
- b Common to very common. Seen every day.
- c Frequent. Seen most days.
- d Seen two or more times, but scarce.
- e Seen or heard only once or twice, though perhaps in a small group.

N—Mist-netting: the total number of individuals of that species caught is noted.

	Itwara		Kasyoha	
Family and species	O	N	O	N
Phalacrocoracidae cormorants				
Greater Cormorant *Phalacrocorax carbo*	-	-	d	-
Ardeidae herons, etc.				
Black-headed Heron *Ardea melanocephala*	e	-	-	-
Threskiornithidae ibises				
Hadada *Bostrychia hagedash*	-	-	d	-
Anatidae ducks, etc.				
Yellow-billed Duck *Anas undulata*	-	-	e	-
Accipitrididae birds of prey				
Great Sparrowhawk *Accipiter melanoleucus*	e	-	-	-
African Goshawk *A. tachiro*	-	3	e	-
Augur Buzzard *Buteo augur*	-	-	e	-
Long-crested Eagle *Lophaetus occipitalis*	-	-	d	-
Fish Eagle *Haliaeetus vocifer*	-	-	e	-
Black Kite *Milvus migrans*	d	-	-	-
Pandionidae osprey				
Osprey *Pandion haliaetus*	-	-	e	-
Phasianidae francolins				
Scaly Francolin *Francolinus squamatus*	e	-	-	

Family and species	Itwara O	Itwara N	Kasyoha O	Kasyoha N
Numididae guineafowls				
Crested Guineafowl *Guttera edouardii*	-	-	d	-
Gruidae cranes				
Crowned Crane *Balearica pavonina*	-	-	d	-
Columbidae pigeons, doves				
White-naped Pigeon *Columba albinucha*	-	-	e	-
Olive Pigeon *C. arquatrix*	d	-	-	-
Afep Pigeon *C. unicincta*	d	-	e	-
Ring-necked Dove *Streptopelia capicola*	e	-	-	-
Red-eyed Dove *S. semitorquata*	c	-	d	-
Blue-spotted Wood Dove *Turtur afer*	e	-	d	-
Tambourine Dove *T. tympanistria*	c	2	c	10
Green Pigeon *Treron australis*	d	-	d	-
Psittacidae parrots				
Grey Parrot *Psittacus erithacus*	-	-	d	-
Musophagidae turacos				
Great Blue Turaco *Corythaeola cristata*	c	-	b	-
Ross's Turaco *Musophaga rossae*	e	-	e	-
Black-billed Turaco *Tauraco schuetti*	e	-	d	-
Cuculidae cuckoos				
Dusky Long-tailed Cuckoo *Cercococcyx mechowi*	-	1	-	-
Didric Cuckoo *Chrysococcyx caprius*	-	-	-	1
Emerald Cuckoo *C. cupreus*	d	-	d	-
Klaas' Cuckoo *C. klaas*	e	-	-	-
African Cuckoo *Cuculus gularis*	-	-	e	-
Red-chested Cuckoo *C. solitarius*	-	-	c	-
Yellowbill *Ceuthmocares aereus*	e	-	d	-
Strigidae owls				
African Wood Owl *Ciccaba woodfordii*	d	-	-	-
Red-chested Owlet *Glaucidium tephronotum*	-	-	-	1
Apodidae swifts				
Little Swift *Apus affinis*	d	-	d	-
White-rumped Swift *A. caffer*	d	-	-	-
Palm Swift *Cypsiurus parvus*	e	-	d	-
Coliidae mousebirds				
Speckled Mousebird *Colius striatus*	d	-	c	-
Trogonidae trogons				
Narina's Trogon *Apaloderma narina*	e	-	c	-
Alcedinidae kingfishers				
Pied Kingfisher *Ceryle rudis*	-	-	d	-
Shining-blue Kingfisher *Alcedo quadribrachys*	-	-	e	-
Blue-breasted Kingfisher *Halcyon malimbica*	-	-	d	3
Pygmy Kingfisher *Ispidina picta*	-	-	c	1
Meropidae bee-eaters				
White-throated Bee-eater *Merops albicollis*	c	-	b	-
Black Bee-eater *M. gularis*	-	-	c	-

Family and species	Itwara O	Itwara N	Kasyoha O	Kasyoha N
Little Bee-eater *M. pusillus*	-	-	d	-
Madagascar Bee-eater *M. superciliosus*	-	-	e	-
Coraciidae rollers				
Broad-billed Roller *Eurystomus glaucurus*	-	-	d	-
Blue-throated Roller *E. gularis*	c	-	e	-
Phoeniculidae wood hoopoes				
White-headed Wood Hoopoe *Phoeniculus bollei*	-	-	d	-
Bucerotidae hornbills				
Black and White Casqued Hornbill *Bycanistes subcylindricus*	b	-	c	-
Crowned Hornbill *Tockus alboterminatus*	c	-	e	-
Capitonidae barbets				
Yellow-spotted Barbet *Buccanodon duchaillui*	e	-	c	2
Grey-throated Barbet *Gymnobucco bonapartei*	d	-	c	-
Hairy-breasted Barbet *Lybius hirsutus*	d	-	d	-
Yellow-rumped Tinkerbird *Pogoniulus bilineatus*	b	-	d	-
Speckled Tinkerbird *P scolopaceus*	e	-	d	4
Yellow-billed Barbet *Trachylaemus purpuratus*	-	1	-	-
Indicatoridae honeyguides				
Lesser Honeyguide *Indicator minor*	e	-	e	-
Picidae woodpeckers				
Brown-eared Woodpecker *Campethera caroli*	e	-	e	2
Buff-spotted Woodpecker *C. nivosa*	-	-	d	3
Fine-banded Woodpecker *C. tullbergi*	-	-	e	-
Cardinal Woodpecker *Denropicos fuscescens*	-	-	e	-
Yellow-crested Woodpecker *Mesopicos xantholophus*	d	-	e	-
Bearded Woodpecker *Thripias namaquus*	-	-	e	-
Eurylaimidae broadbills				
African Broadbill *Smithornis capensis*	-	1	c	-
Hirundinidae swallows				
Striped Swallow *Hirundo abyssinica*	c	-	-	-
Angola Swallow *H. angolensis*	d	-	c	-
African Rock Martin *H. fuligula*	e	-	-	-
Mosque Swallow *H. senegalensis*	c	-	c	-
Wire-tailed Swallow *H. smithii*	e	-	e	-
White-headed Roughwing *Psalidoprocne albiceps*	e	-	b	-
Black Roughwing *P. pristoptera*	-	-	d	-
Dicruridae drongos				
Drongo *Dicrurus adsimilis coracinus*	d	-	-	-
Oriolidae orioles				
Western Black-headed Oriole *Oriolus brachyrhynchus*	d	-	b	-
Black-headed Oriole *O. larvatus*	d	-	d	-
Corvidae crows				
Pied Crow *Corvus albus*	e	-	e	-
Paridae tits				
Dusky Tit *Parus funereus*	e	-	c	-

Family and species	Itwara O	Itwara N	Kasyoha O	Kasyoha N
Timaliidae babblers				
Scaly-breasted Illadopsis *Trichastoma albipectus*	-	3	-	6
Brown Illadopsis *T. fulvescens*	-	-	d	6
Pale-breasted Illadopsis *T. rufipennis*	-	1	e	3
Campephagidae cuckoo shrikes				
Petit's Cuckoo Shrike *Campephaga petiti*	c	-	d	-
Pycnonotidae bulbuls				
Cameroon Sombre Greenbul *Andropadus curvirostris*	-	11	d	7
Yellow-whiskered Greenbul *A. latirostris*	b	149	a	95
Little Greenbul *A. virens*	c	47	c	140
Honeyguide Greenbul *Baeopogon indicator*	e	1	e	-
Bristlebill *Bleda syndactyla*	d	14	e	7
Red-tailed Greenbul *Criniger calurus*	-	-	b	16
Spotted Greenbul *Ixonotus guttatus*	e	-	-	-
Nicator *Nicator chloris*	e	-	d	1
White-throated Greenbul *Phyllastrephus albigularis*	d	1	e	5
Toro Olive Greenbul *P. baumanni*	-	4	-	4
Olive Mountain Greenbul *P. placidus*	-	4	-	-
Xavier's Greenbul *P. xavieri*	e	5	-	2
Common Bulbul *Pycnonotus barbatus*	b	-	b	1
Turdidae thrushes				
Brown-chested Alethe *Alethe poliocephala*	-	29	-	28
Blue-shouldered Robin Chat *Cossypha cyanocampter*	-	5	-	3
Red-capped Robin Chat *C. natalensis*	e	6	-	-
Snowy-headed Robin Chat *C. niveicapilla*	-	-	e	-
White-tailed Ant Thrush *Neocossyphus poensis*	d	6	-	6
Red-tailed Ant Thrush *N. rufus*	e	-	-	-
Equatorial Akalat *Sheppardia aequatorialis*	-	11	-	-
Rufous Thrush *Stizorhina fraseri*	-	-	c	9
African Thrush *Turdus pelios*	e	-	e	-
Sylviidae warblers				
Masked Apalis *Apalis binotata*	d	-	-	-
Grey Apalis *A. cinerea*	-	-	d	-
Black-throated Apalis *A. jacksoni*	e	-	d	-
Buff-throated Apalis *A. rufogularis*	c	-	c	1
Black-faced Rufous Warbler *Bathmocercus cerviniventris*	-	13	-	-
Grey-backed Camaroptera *Camaroptera brachyura*	d	4	d	3
Green Hylia *Hylia prasina*	e	3	d	15
White-chinned Prinia *Prinia leucopogon*	b	-	b	-
Tawny-flanked Prinia *P. subflava*	d	1	-	-
Green Crombec *Sylvietta virens*	-	-	d	11
Muscicapidae flycatchers				
Sooty Flycatcher *Artomyias fuliginosa*	e	-	c	-
White-eyed Slaty Flycatcher *Melaenornis chocolatina*	e	-	-	-
Black Flycatcher *M. edolioides*	-	-	e	-
Dusky Flycatcher *Muscicapa adusta*	e	-	d	-
Cassin's Grey Flycatcher *M. cassini*	-	-	e	-

Family and species	Itwara O	Itwara N	Kasyoha O	Kasyoha N
Dusky Blue Flycatcher *M. comitata*	-	-	c	3
Grey-throated Flycatcher *M. griseigularis*	-	-	e	4
Black and White Flycatcher *Bias musicus*	-	-	e	-
Shrike Flycatcher *Megabyas flammulata*	d	-	c	1
Jameson's Wattle-eye *Platysteira blisseti*	e	3	d	8
Chestnut Wattle-eye *P. castanea*	-	1	d	7
Yellow-bellied Wattle-eye *P. concreta*	-	-	c	-
Blue Flycatcher *Erannornis longicauda*	-	-	c	-
Red-bellied Paradise Flycatcher *Terpsiphone rufiventer*	d	1	-	-
Paradise Flycatcher *T. viridis*	-	-	b	5
Crested Flycatcher *Trochocercus cyanomelas*	e	-	c	-
Dusky Crested Flycatcher *T. nigromitratus*	-	-	e	2
Motacillidae wagtails, pipits				
Yellow-throated Longclaw *Macronyx croceus*	e	-	-	-
African Pied Wagtail *Motacilla aguimp*	c	-	e	-
Mountain Wagtail *M. clara*	-	-	c	-
Malaconotidae bush shrikes				
Pink-footed Puffback *Dryoscopus angolensis*	-	-	e	-
Lühder's Bush Shrike *Laniarius luehderi*	d	1	-	-
Brown-headed Tchagra *Tchagra australis*	c	-	-	-
Black-headed Tchagra *T. senegala*	-	-	e	-
Laniidae shrikes				
Mackinnon's Shrike *Lanius mackinnoni*	d	-	c	-
Sturnidae starlings				
Purple-headed Glossy Starling *Lamprotornis purpureiceps*	e	-	c	-
Purple Glossy Starling *L. purpureus*	d	-	d	-
Rüppell's Long-tailed Glossy Starling *L. purpuropterus*	e	-	-	-
Splendid Glossy Starling *L. splendidus*	d	-	c	-
Waller's Chestnut-winged Starling *Onychognathus walleri*	c	-	-	-
Narrow-tailed Starling *Peoptera lugubris*	e	-	-	-
Nectariniidae sunbirds				
Collared Sunbird *Anthreptes collaris*	c	-	c	-
Grey-headed Sunbird *A. fraseri*	-	-	d	7
Green Sunbird *A. rectirostris*	d	-	-	-
Little Purple-banded Sunbird *Nectarinia bifasciata*	-	-	d	-
Olive-bellied Sunbird *N. chloropygia*	-	-	b	2
Blue-throated Brown Sunbird *N. cyanolaema*	c	-	d	-
Bronze Sunbird *N. kilimensis*	e	-	-	-
Olive Sunbird *N. olivacea*	b	47	d	105
Green-throated Sunbird *N. rubescens*	d	-	d	-
Little Green Sunbird *N. seimundi*	-	-	d	-
Scarlet-chested Sunbird *N. senegalensis*	d	-	-	-
Superb Sunbird *N. superba*	-	-	e	-
Variable Sunbird *N. venusta*	d	-	-	-
Green-headed Sunbird *N. verticalis*	c	-	c	3
Zosteropidae white-eyes				
Yellow White-eye *Zosterops senegalensis*	c	1	c	-

Family and species	Itwara O	Itwara N	Kasyoha O	Kasyoha N
Ploceidae weavers				
Grosbeak Weaver *Amblyospiza albifrons*	-	-	c	1
Yellow Bishop *Euplectes capensis*	e	-	-	-
Red-headed Malimbe *Malimbus rubricollis*	c	-	c	1
Stuhlmann's Weaver *Ploceus baglafect stuhlmanni*	-	-	d	1
Black-billed Weaver *P. melanogaster*	-	-	-	3
Vieillot's Black Weaver *P. nigerrimus*	b	-	b	5
Black-necked Weaver *P. nigricollis*	-	-	b	6
Spectacled Weaver *P. ocularis*	d	-	-	-
Compact Weaver *P. superciliosus*	d	-	d	1
Yellow-mantled Weaver *P. tricolor*	e	-	-	-
Cardinal Quelea *Quelea cardinalis*	c	-	-	-
Grey-headed Sparrow *Passer griseus*	d	-	d	-
Pin-tailed Whydah *Vidua macroura*	d	-	-	-
Estrildidae waxbills				
Yellow-bellied Waxbill *Estrilda melanotis*	d	-	e	-
Black-crowned Waxbill *E. nonnula*	c	-	c	-
Fawn-breasted Waxbill *E. paludicola*	c	-	d	-
African Firefinch *Lagonosticta rubricata*	d	-	-	-
Green-backed Twinspot *Mandingoa nitidula*	-	1	-	1
White-collared Olive-back *Nesocharis ansorgei*	-	-	e	-
Grey-headed Negrofinch *Nigrita canicapilla*	c	2	d	-
Red-fronted Antpecker *Parmoptila woodhousei*	-	-	e	1
Red-headed Bluebill *Spermophaga ruficapilla*	d	12	d	10
Black and White Mannikin *Lonchura bicolor*	c	-	c	-
Bronze Mannikin *L. cucullata*	b	-	d	-
Fringillidae buntings, etc.				
Yellow-rumped Seed-eater *Serinus atrogularis*	-	-	e	-
Thick-billed Seed-eater *S. burtoni*	d	-	-	3
African Citril *S. citrinelloides*	d	-	-	-
Streaky Seed-eater *S. striolatus*	d	-	-	-
Brimstone Canary *S. sulphuratus*	d	-	e	-

A total of 585 individuals of 52 species were netted in Kasyoha–Kitomi during 21 200 metre net hours of effort. One hundred and ten forest species were observed making a total of 125 recorded, plus a further 26 forest-edge or non-forest species. A total of 406 individuals of 35 species were mist-netted in Itwara during 13 500 metre net hours of effort. Ninety-four forest species were observed, making a total of 111 recorded, plus a further 22 forest-edge and non-forest species.

A total of 193 bird species was recorded in the two forests, 97 of which occurred in both, 59 in Kasyoha alone, and 37 only in Itwara. In addition to the differences in the species present, the two forests also differed in the relative abundance of many species. Thus, for instance, the Yellow-whiskered Greenbul was the most frequently netted greenbul in Itwara while in Kasyoha more Little Greenbuls were caught. Red-tailed Greenbul and Rufous Thrush were common in Kasyoha but absent in Itwara, while the converse was true for Red-capped Robin Chat, Equatorial Akalat and Black-faced Rufous

Warbler. It would thus appear that the two forests, although fairly comparable because of their similar location, altitude and vegetation type, differ in the composition of their avifauna. One important factor is, of course, that Kasyoha is much larger and therefore overall diversity would be expected to be higher.

Differences in the avifauna of forests almost certainly reflect underlying differences in the overall composition of their ecosystems, including climate, altitude, floristic composition and the past level of disturbance. The fragmentation of the forests may also be important since chance extinctions in one forest can now less easily be made good by recolonization. Differences will also occur within a single forest, as most of Uganda's forests contain several different forest types. In this context more survey work is clearly needed. We looked at only a small proportion of each forest during our survey.

The detailed conservation needs of these and other forests is discussed elsewhere (Howard in press). In both cases, the designation of sections as forest nature reserves, combined with the relevant enforcement, would be an important first step. Itwara in particular needs some core refuge areas for wildlife. The pressure for encroachment into Kasyoha–Kitomi could be eased by the development of plantations and improvement of agricultural efficiency around its perimeter. Increased resources will be needed for the Forest Department in order to achieve these goals, as well as the political will to utilize these rich forests in a sustainable manner.

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APPENDIX 1

The main aim of our work in Uganda's forests was to list as many of the bird species as possible. Both mist-netting and observation are used in almost all studies of forest birds. We were uncertain at the outset on how to divide our effort between these two methods. We therefore considered it useful to include a discussion of some of the factors important in determining the relative merits of the two, based on our own experiences.

In order to compare the rates of return from observation and mist-netting, graphs of numbers of species recorded against man-hours of effort were plotted for each of the two forests (Fig. A). Time spent observing was plotted into 5-h blocks, and species first sighted during each block were noted. With mist-netting, effort is distributed rather irregularly. Considerable time is spent setting up the nets each time they are moved (every two days in our case) before any records start to accumulate. However, after that more and more species are found, with only intermittent effort in checking the nets. Species numbers were therefore plotted firstly against numbers of individual birds caught, which will, on average, reflect the amount of effort put in. The axes were then rescaled to man-hours of effort using the following ratio:

$$r = \frac{\text{total number of individuals caught}}{\text{total number of man-hours of effort}}$$

The figure r was found to be 3.55 for Itwara and 4.19 for Kasyoha–Kitomi. With both observation and netting the effort of the principal ornithologist alone was used to plot the curves. In the case of mist-netting, local assistants were used and proved to be a very valuable way of improving the efficient use of our time.

Because of the difficulties of equating the amount of effort put into the two techniques, it would be unwise to try to draw detailed conclusions from the graphs. However, it is clear that observation did provide us with a longer list of species for a given amount of effort. None of the curves had levelled out by the end of our studies in either forest and so studies

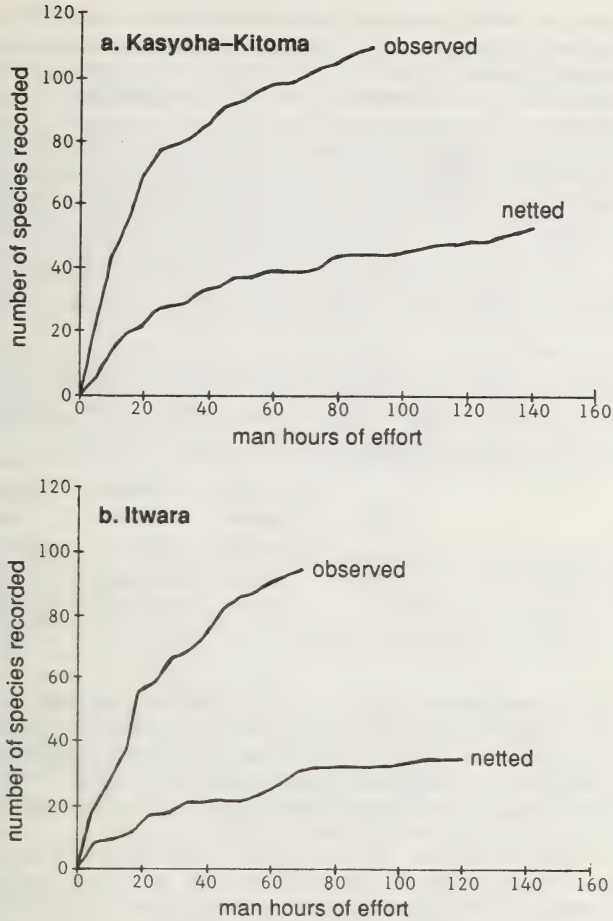

Fig. A. *The relative returns, in terms of numbers of species recorded, from observation and mist-netting, for each of the two forests. See text for further explanation.*

involving several thousand man-hours of effort may be required to draw firmer conclusions.

The ratio *r* is an indicator of the efficiency of our netting methods, being the number of individual birds caught per man-hour of effort. Any factors affecting this ratio will alter the relative positions of the two curves in each graph, and thus the relative returns from observation and mist-netting. Such factors involve the total length of mist-net available and how it is divided up, the availability and proficiency of helpers, the density of vegetation and the weather. Mist-netting becomes virtually impossible in the rain.

The aims of any proposed study will also be important in deciding how to divide effort between observation and mist-netting. If the aim is to gather more information than

simply a list of species present, such as information on population density or movements, or biological data on the birds themselves, then mist-netting becomes almost essential.

Perhaps the most important reason for dividing effort between netting and observation is that each method picks up a different subset of the total range of species present (Table A). Many larger canopy species are easily identified by observation alone but would almost certainly never be caught in mist-nets. On the other hand, many of the skulking species living in the forest undergrowth, often dull coloured and hard to identify, would seldom be recorded purely by observation. Furthermore, it is easier to identify some of the problematic species in the field if they have already been identified in the hand. Therefore if the aim of a study is to make as complete a check-list as possible and time is not too limited, then both methods should be used. If time is very limited, more species might be recorded by concentrating on observation, and forsaking mist-netting.

Table A. *The number of species recorded only by mist-netting or observation in the two forests. The figures in brackets refer to the total number of species recorded in that forest by each method. Totals only include species considered to be true forest birds.*

Forest	Total number of species recorded	Number observed only	Number netted only
Itwara	111	76 (94)	17 (35)
Kasyoha–Kitomi	125	73 (110)	15 (52)

We have so far considered only numbers of species recorded as an indicator of the relative returns from observation and mist-netting. However, the recording of certain rare species, or species outside their normal ranges, will obviously be of more significance than that of common widespread ones. Unfortunately it is not possible to conclude from our limited data as to whether either of the techniques is more likely to pick up the interesting species. Our more significant records came from both methods.

Inevitably different workers will find themselves in varying field situations, and we cannot suggest rules governing the use of mist-netting and observation in all such circumstances. However, by considering the factors discussed it may be possible to reduce the amount of time spent perfecting techniques.

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Ed.

ADDITIONAL ORNITHOLOGICAL RECORDS FROM FIVE WESTERN UGANDAN FORESTS

Paul Buckley, Alastair McNeilage and Charles Walker

Between July and October 1987, the authors visited seven of the major tropical forest areas of western Uganda in order to investigate their bird, and also their butterfly, faunas. Records from two previously unstudied forests, Itwara and Kasyoha–Kitomi are dealt with in a separate paper (Buckley & McNeilage 1989). In the present paper we list new records from the five other forest areas that we visited. In the case of four of these forests, papers by Friedmann & Williams (1969, 1970a, 1970b, 1971), written as part of the biological survey by the Los Angeles County Museum, comprise the most up-to-date information. The forests of the Rwenzori have been studied by a variety of authors (Ogilvie-Grant 1910, van Someren & van Someren 1949, Weekes 1949, Masterson 1981). The reader is advised to refer to these references to assess the state of knowledge at the time of our visit. Friedmann & Williams (*op. cit.*) also give a good summary of previous work in these forests, while Britton (1980) summarizes East African distribution for all species mentioned. Classification follows Britton (1980) throughout.

KALINZU FOREST

A 130 km^2 forest lying between 1300 and 2000 m altitude in Ankole district. Kalinzu has been fairly heavily logged in the past and is clearly now smaller than its previous extent. However, it is interesting to note the comments of Friedmann & Williams (1970a) who had reason to believe that the forest was then on the verge of clearfelling. This has not occurred, and some unexploited areas do remain. Pitsawying and small-scale felling is still widespread, however (Howard 1986).

Kalinzu is contiguous with Maramagambo Forest, part of which lies within the Queen Elizabeth National Park. Both areas have been reasonably well studied in the past but we found two species not previously recorded from either forest. PB and AM visited Kalinzu from 27 July to 11 August 1987, basing themselves at the Nkombe sawmill site in the centre of the forest. Ninety-eight forest species were recorded and 66 individuals of 23 species were netted in 2700 metre net hours of effort. The following new species were recorded:

White-naped Pigeon ***Columba albinucha*** A pair of these birds was seen regularly around heavily logged secondary forest. The white nape and red bill and feet were obvious distinguishing features. This rare pigeon was previously known in Uganda only from Kibale and Bwamba forests.

Mountain Greenbul ***Andropadus tephrolaemus*** This bird was mist-netted twice in secondary forest near the sawmill.

RWENZORI FOREST

The forest reserve extends over 1000 km^2, including forest above 2000 m and the whole of the Ugandan side of this famous mountain range. Rwenzori has an exceptional number of species of restricted range: these are well documented and the majority were seen on our study between 12 and 19 August 1987. Five nights were spent in forest at around

2500 m and the remainder near to the Ibanda roadhead: the aim being to add some lower altitude species to the otherwise extensive reserve list. Sixty-five species were identified and 82 individuals of 20 species were netted in 2700 metre net hours of effort. The following forest species do not seem to have been documented previously:

Long-crested Eagle ***Lophaetus occipitalis*** One seen near in lower forest in the Mubuku valley.

Tambourine Dove ***Turtur tympanistria*** Common below 2500 m.

Speckled Mousebird ***Colius striatus*** Very common.

Giant Kingfisher ***Ceryle maxima*** One seen along the Mubuku river.

White-headed Roughwing ***Psalidoprocne albiceps*** Seen on the lower forest edge by the Mubuku river.

Wattle-eye ***Platysteira cyanea*** One seen to the north of Mubuku river.

Brown-capped Weaver ***Ploceus insignis*** Pairs seen several times in treetops.

White-collared Olive-back ***Nesocharis ansorgei*** One seen on forest edge near to Ibanda.

Red-headed Bluebill ***Spermophaga ruficapilla*** Four netted in forest around 2500 m.

SANGO BAY FORESTS

A series of linked forests continuous with areas in Tanzania, of which Malabigambo is the largest. Between them lie rough grazing lands, small areas of cultivation and papyrus swamps, together forming an interesting and diverse complex. Friedmann & Williams (1969) have studied the area and their paper offers a good summary of work prior to their visit. CW visited the area from 12 to 27 July 1987 when 5360 metre net hours of mist-netting were undertaken. PB and AM returned to the area from 27 September to 3 October 1987 and achieved a further 6920 metre net hours. Both visits were based near the Kyotera road in the north of Malabigambo Forest. New records below include notable species seen in acacia and grassland around the forest, since the area is characterized by an interrelated mosaic of habitat types. A total of 162 species was seen with 293 birds of 44 species being mist-netted.

Brown Snake Eagle *Circaetus cinereus*, Great Sparrowhawk *Accipiter melanoleucus*, Tawny Eagle *Aquila rapax*, and Augur Buzzard *Buteo augur* were among an excellent variety of raptors seen in and around the forest edges. A single African Goshawk *Accipiter tachiro* was netted in Namalala.

Blue-spotted Wood Dove *Turtur afer* was seen in the study area.

Grey Parrot *Psittacus erithacus* Singles and pairs seen regularly.

Klaas' Cuckoo *Chrysococcyx klaas* One seen at Namalala and a pair on the edge of Malabigambo.

Red-chested Cuckoo *Cuculus solitarius* Heard and seen regularly.

Dwarf Kingfisher *Ispidina lecontei* One observed in Malabigambo.

Cinnamon-chested Bee-eater *Merops oreobates* Small groups were seen around Namalala.

Bearded Woodpecker *Thripias namaquus* One seen in Malabigambo.

African Broadbill *Smithornis capensis* Heard regularly in Namalala.

Blue Swallow *Hirundo atrocaerulea* Several specimens of this rare swallow were seen in grassland areas around Malabigambo.

Red-rumped Swallow *H. daurica*, African Thrush *Turdus pelios* Seen regularly along the road through northern Malabigambo.

Spotted Flycatcher *Muscicapa striata* One seen on the same road on 1 October.

Paradise Flycatcher *Terpsiphone viridis* One seen in Namalala and several in northern Malabigambo. A hybrid of this species and the Red-bellied Paradise Flycatcher *T. rufiventer* was mist-netted. The specimen had the long tail and white wing markings of *viridis* and the red belly of *rufiventer*.

Blue-headed Crested Flycatcher *Trochocercus nitens* One netted in Malabigambo.

Black-headed Gonolek *Laniarius barbarus*, Grey-backed Fiscal *Lanius excubitorius* and Mackinnon's Shrike *Lanius mackinnoni* were all seen on the forest edge.

Violet-backed Starling *Cinnyricinclus leucogaster* One seen in Malabigambo.

Purple-headed Glossy Starling *Lamprotornis purpureiceps* Two seen on forest edge in northern Malabigambo.

Scarlet-chested Sunbird *Nectarinia senegalensis* A pair seen in scrub in the south of Malabigambo.

Yellow White-eye *Zosterops senegalensis* One observed in Malabigambo.

Black-crowned Waxbill *Estrilda nonnula* A pair seen at Namalala and small flocks around the southern Malabigambo.

BWAMBA (SEMLIKI) FOREST

A low-lying area of around 220 km^2. Ecologically it is part of the Ituri Forest of Zaïre and has long been known for its exceptional biological diversity, with many species recorded nowhere else in East Africa (van Someren & van Someren 1949, Williams 1951, Ridley *et al.* 1953, Eggling 1954, Friedmann & Williams 1971, Williams & Arlott 1980). It has suffered extensive encroachment in the last 15 years, and few large tracts of primary forest remain (Howard 1986). The presence of forest edge species among the new records leads to speculation that the degradation is actively changing the avifauna. Further research into this is needed. A rural development project is now operating in Bwamba with the aim of arresting the destruction (Howard 1987a). Forestry, agricultural and sociological researchers are working to promote sustainable development among people living in and around the forest.

CW worked in the area from 1 to 14 August 1987, and a few new forest species were recorded among the 67 identified. In this time 2830 metre net hours of mist-netting were undertaken resulting in the capture of 82 individuals of 27 species. The following species are believed not to have been recorded previously.

Joyful Greenbul ***Chlorocichla laetissima*** One individual netted.

African Thrush ***Turdus pelios*** One seen.

Black Flycatcher ***Melaenornis edolioides*** Single birds seen several times.

Cassin's Grey Flycatcher ***Muscicapa cassini*** Two seen on the river Lamia.

Northern Double-collared Sunbird ***Nectarinia preussi*** One seen.

BUGOMA FOREST

The most northerly forest in our study and one of the least disturbed. Bugoma is a large middle-altitude forest between about 1100 and 1300 m. CW studied the area from 15 to 27 August 1987. Eighty-seven birds of 27 species were mist-netted in a total of 3217 metre net hours of effort. A total of 80 forest species was identified including the following new species.

Martial Eagle ***Polemaetus bellicosus*** Seen on two separate occasions on the forest edge.

Eastern Grey Plantain Eater ***Crinifer zonurus*** Heard and seen regularly.

Speckled Mousebird ***Colius striatus*** Seen regularly in small groups.

Pygmy Kingfisher ***Ispidina picta*** One specimen netted.

Red-tailed Ant Thrush ***Neocossyphus poensis*** Netted twice.

Blue Flycatcher ***Erannornis longicauda*** Two seen.

Scarlet-chested Sunbird ***Nectarinia senegalensis*** One individual seen on the edge of the forest.

Black-headed Weaver ***Ploceus cucullatus*** One seen.

Spectacled Weaver ***P. ocularis*** One seen.

Fawn-breasted Waxbill ***Estrilda paludicola*** Groups of 2–3 regularly seen.

Grey-headed Negrofinch ***Nigrita canicapilla*** One seen at the sawmill.

African Citril ***Serinus citrinelloides*** One seen on forest edge.

CONCLUSION

All of these forests are of considerable value for birds and for other wildlife. Each has scarce species, many of which are found on the edges of their range in western Uganda. Fuller results of the Tropical Forest conservation project are reported elsewhere (Howard in press). Civil unrest means that little monitoring work or conservation effort has been attempted here in the last two decades. Wildlife enthusiasts should now strive to ensure that future inevitable and necessary development around these forests does not destroy their rich biological resources.

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Scopus 13: 109–113, October 1989 Received 4 April 1989, revised 1 September 1989

SHORT COMMUNICATIONS

Four aberrantly plumaged birds observed in Kenya

Britton (1969) gives the incidence of albinism in the *c.* 25 000 bird skins held by the National Museums of Kenya at Nairobi as *c.* 0.02 per cent, while the proportion in 3000 birds that he personally netted and handled was *c.* 0.13 per cent. These very low percentages concur with the very small numbers of abnormally coloured birds that are encountered during the numerous bird-watching and wildlife safaris that we lead in Kenya. Here we report four aberrantly plumaged individuals.

Ring-necked Dove *Streptopelia capicola*

On 15 June 1989, a semi-albino was seen c. 40 km west of Narok along the main B3 road. As this individual flew away amidst a small number of others of the same species, the entire dorsal surface of its closed tail could be seen to be a bright, pure white, extremely prominent even at some distance. The rest of its plumage features were normal.

Superb Starling *Spreo superbus*

During February 1989, about 70 km west of Narok on the C13 road, an albino Superb Starling was watched amongst a small flock of its congeners. This bird was entirely white, with pink eyes and pale legs. Identification was based upon the identical size and structure of its companions.

White-headed Buffalo Weaver *Dinemellia dinemelli*

A leucistic individual was seen along the main Nairobi–Mombasa road about 15 km north of Hunter's Lodge on 2 May 1981. This bird had the usual plumage colourations of the species except that the under-tail coverts were an abnormally pale orange, rather than a darker orange-red, the white flash at the base of the primaries was abnormally large and the tail, mantle and wings—normally a medium to darkish brown—were a very pale, creamy brown. Mackworth-Praed & Grant (1960) note that loss of pigment is not uncommon in this species.

Waxbill *Estrilda astrild*

A xanthochroic individual was present near the Hippo Pools in Nairobi National Park on 24 June 1986. The entire bird was a pale yellowish colour, apart from the bill, lores and eyestripe, the normal, red colour of which identified the species.

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 Received 13 July 1989

Shy Albatross *Diomedea cauta*: the first record for Tanzania

On 7 September 1985 an immature Shy Albatross *Diomedea cauta* of the nominate race was located in Mtwara (10°17S, 40°11E), south-eastern Tanzania. The bird had been caught by fishermen operating out of Msimbati and was offered for sale at Mtwara Market. It was photographed, but unfortunately not measured, and was later released at sea. The record has been accepted by the East African Rare Birds Committee.

The second East African record was of another immature at Mombasa just over a year later (Gichuki & Pearson 1987).

Acknowledgement
We wish to thank Mr R. Watt for bringing this bird to our attention.

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Migrant Lesser Kestrels *Falco naumanni* associating with plains game in Serengeti National Park, Tanzania

During the Palaearctic winter, large numbers of migrant kestrels *Falco* spp. spend time over the grassland of the Serengeti plains, particularly during the period March–April when they are moving north (Schmidl 1982). The birds roost regularly in the few trees, both isolated ones and those on *kopjes*, that offer relief from the open plains habitat. They can be seen gathering at these sites at dusk, much in the manner described for larger roosts in Nairobi National Park (Smalley 1983) and on the Athi Plains near Kajiado (Taylor 1984), in Kenya. Huge concentrations are well known from wintering grounds in southern Africa (Siegfried & Skead 1971). The species is gregarious all year round (Brown *et al.* 1982).

During the day, the kestrels are often found alone or in small parties, beating over and hovering above the grassland in search of their insect prey. However, on 17 March 1987, on the medium grass plains north-west of Gol *kopjes* and in the shallow valley of the Esoit Ndiarkarta River, a large concentration of Lesser Kestrels *Falco naumanni* was observed feeding in association with a herd of Plains Zebra *Equus burchelli*. As many as 600 kestrels were wheeling over approximately 1500 zebras and I observed a number drop and successfully capture insects amongst the game. Two days later, the zebras had moved north-west along the Esoit Ndiarkarta to Sametu *kopjes* and were still attracting large numbers of kestrels.

Although a subjective observation, it seemed clear that the birds were attracted to the herds of migrant game—zebras and Blue Wildebeests *Connochaetes taurinus*—wherever they occurred in large concentrations. Lesser Kestrels have been described exploiting such associations before, e.g. feeding on grasshoppers disturbed by buffalos *Syncerus caffer* (Meinertzhagen 1959) and by a man walking (C.J. Vernon, pers. comm. to Dean & MacDonald 1981). The birds observed near Esoit Ndiarkarta were certainly exploiting similar opportunities and the congregation suggested that the foraging environment was a rich one.

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Scopus 13: 115–116, October 1989 Received 6 July 1989

The Barbary Falcon *Falco pelegrinoides* in Kenya

The Barbary Falcon *Falco pelegrinoides* breeds in Morocco, Algeria, Tunisia, Egypt, Israel, and further to the south in northern Sudan and the Yemen (Cade 1982). In Kenya it has been considered to be a very rare Palaearctic migrant. One of two falcons migrating with other birds of prey was shot near Loiyengalani on 4 November 1958 (Owre & Paulson 1968), and this proved to be a female Barbary, the only record given for East Africa by Britton (1980).

On 21 February 1981 an adult male Barbary Falcon was found at Marania Farm, Timau, at some 2500 m, on the northern slopes of Mt Kenya. It had a badly injured wing and could not be released. It has since been maintained successfully in captivity. It has mated with a captive female Peregrine Falcon *F. peregrinus* in late 1983, mid 1986 and June 1989 although no eggs were laid. The Barbary has been used as a foster parent for young falcons, kites and, on one occasion, a Great Sparrowhawk *Accipiter melanoleucus*, although this chick was too aggressive and had to be removed. The male Barbary is now at least 11 years old.

During my stay at Timau, between 1981 and 1984 I observed other Barbary Falcons in the area on several occasions. On the northern cliffs of Lewa Downs (about 15 km south of Isiolo town) I noted an adult male on 17 September 1981, adult male and female together the next day and a single bird on 21 January 1982. Close views were obtained on 18 October, and the male perched on the cliff only a metre or so from me. Meanwhile, at Marania Farm, about 7 km south of the cliffs, the injured captive male called down other Barbary Falcons on 23 November 1981 (a male), on 21 June 1983 (an unexpected date; another male) and on 24 October 1983. On the last date the attracted female perched in a tree above a pair of Verreaux's Eagle Owls *Bubo lacteus*. It was very aggressive towards the owls and curious of the captive Barbary, and was watched at about 10 m for half an hour. I saw what I believed to be this female nearby on 10 and 21 November 1983. On 10th it attacked a wounded Crowned Plover *Vanellus coronatus* within 3 m of me, and on 21st it attacked a pet Indian House Crow *Corvus splendens*, but without success.

I made one other sighting of a Barbary Falcon in the area during this period, obtaining close views of a bird at Ololokwe (north of Archer's Post) on 15 November 1982. No more sightings have been made since 1984. Despite numbers of large falcon nest sites being studied in the Kedong and Machakos areas during the last six years, no Barbary Falcons have been seen.

The cliff birds may have been the same individuals as those attracted to the captive male. However, assuming that the Ololokwe bird was a different individual, at least four different birds were thus encountered in the Isiolo area between 1981 sand 1984. The pair that took up residence could have been wintering as they were present during those months that Palaearctic migrants visit Kenya. It is possible, however, that they were migrants from only as far as northern Sudan or Yemen, where their breeding season is likely to be in the northern summer. It must be considered, however, a possibility that the Barbary Falcon breeds in northern Kenya. Ecologically, some of the semi-desert and desert areas there would be ideal for this species.

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Scopus 13: 116–117, October 1989 Received 23 May 1986, updated 1 August 1989

Barbary Falcons *Falco pelegrinoides* in Tsavo

On 24 November 1987, a medium-sized, Peregrine-like falcon was seen at dusk 'dashing' along the cliff east of Ngulia Lodge in Tsavo West National Park, Kenya. Further brief views, presumably of the same bird, were obtained the next evening by DJP, GCB and M.A.C. Coverdale.

The bird had brownish-grey upperparts, particularly pale on the rump, and a bold moustache pattern, but it appeared slender for a Peregrine *Falco peregrinus*. Despite two more brief sightings, it was not until 29 November that good views of the bird were obtained. On this occasion it flew past three times, low and in good light at some 50–100 m range. It then circled for about a minute 50–70 m overhead, well illuminated by the low morning sun. The following points were noted by GCB, DJP and DAT: wings pointed, tail medium length (longer than in a Hobby *F. subbuteo*), generally smaller and slimmer looking than a Peregrine. The whole underparts looked pale, with no barring obvious on the underwing. There were clear narrow dark streaks on the sides of the breast, extending to the flanks. The upperparts were brownish grey, noticeably paler on the rump. The upper-tail was grey. A bold moustachial mark contrasted with whitish cheeks and dark cap, but rufous was visible on the hind neck. The bird was identified as a Barbary Falcon *F. pelegrinoides* from its size and jizz, its pale upperparts, the lack of any heavy marking

below and the rufous on the neck. The streaked breast indicated that it was an immature.

Further views of Barbary Falcons were obtained at Ngulia three weeks later. On 16 December a hunting bird passed fast and low in front of the Lodge. Two mornings later a bird was watched by BWF, DJP, D.E.G. Backhurst and A. Potterton circling about 100 m overhead. Pale underparts and brownish grey upperparts were again noted. This time, barring was looked for carefully below, and was faintly discernible on the underwing. This was a different bird from that of 29 November, for it had small bars on the sides of the breast and flanks, but no streaks. While it circled it was joined by a second bird, similar except that the breast sides were streaked. This was presumed to have been the November bird.

Thus, an immature and an adult Barbary Falcon were present around the Ngulia ridge, the former over a period of at least three weeks. Their status there is uncertain. The only East African record of this species given by Britton (1980) is of a bird collected near Lake Turkana in November 1958 , but Thomsett (1989) gives details of an injured bird found near Isiolo, and other individuals seen in this area between 1981 and 1984.

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Scopus 13: 117–118, October 1989 Received 12 July 1989

A record of Denham's Bustard *Neotis denhami denhami* in north-west Kenya

The race *Neotis denhami jacksoni* of Denham's Bustard was formerly widespread in the Kenya highlands, but has undergone a radical decline during this century to become the scarcest and most endangered of Kenya's bustards (Lewis & Pomeroy 1989). It is known north to grasslands around Maralal (1°06N, 36°42E).

In the second week of May 1987, I found a single individual of this species in grassland lush after recent rains at Lopwarim (4°12N, 34°30E), and was able to observe it down to a distance of 100 m. On distributional grounds, this would appear to be the first record for Kenya of the nominate race, which is known from immediately adjacent areas of Sudan (Nikolaus 1987) and Uganda (Elliott 1972). The absence of any other sightings, despite my working in this area for the last six years, suggests that this individual was a wanderer to the east of its usual range.

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Scopus 13: 118, October 1989 Received 20 May 1989

An 11-year old Mongolian Sandplover *Charadrius mongolus* wintering on the Kenya coast

Waders have been studied and ringed at various inland sites in Kenya but at only one place on the coast, at Mida Creek (3°22S, 39°58E) where 4000–5000 winter (pers. obs and D.J. Pearson pers. comm.). Although more than 3000 waders have been ringed at Mida in the past, only one, a Mongolian Sandplover *Charadrius mongolus*, has been recovered elsewhere (Pakistan), so far (Backhurst 1988). This is a much lower rate of recovery than that obtained from wader ringing at Kenyan inland sites. On the other hand, in the years of regular wader-ringing at Mida the number of retrapped birds encountered was high, indicating a high site fidelity (D.J. Pearson pers. comm.). A similar situation occurred at the coastal wader ringing locality of Suakin (19°05N, 37°20E) on the Sudan Red Sea coast (GN, pers. obs.).

On the nights of 1/2 and 2/3 December 1988 we mist-netted 405 waders at Mida; the last netting carried out there was in early 1985, nearly four years before. The 405 included six retraps from previous years:

Great Sandplover *C. leschenaultii* 2 ringed in October 1984 as adults

Mongolian Sandplover ringed in December 1978 as an adult and one from January 1982 as a first-winter

Little Stint *Calidris minuta* 1 ringed in February 1985 as a first-winter

Terek Sandpiper *Xenus cinereus* 1 ringed in February 1985 as a first-winter.

Thus one Mongolian Sandplover was at least 11 years old when retrapped which appears to be the oldest record for the species. Other longevity records for similar species are 15 years for a Kentish Plover *C. alexandrinus* (Meininger 1988) and 15 years for a Ringed Plover *C. hiaticula* (Mead & Clark 1988).

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Scopus 13: 119, October 1989 Received 3 April 1989

Notable long-interval retraps of Little Stint *Calidris minuta* and Chestnut-banded Sandplover *Charadrius pallidus* at Lake Magadi: a probable longevity record for the Little Stint

During an extended ringing-retrapping study of the Little Stint *Calidris minuta* at Magadi Hot Springs (2°00S, 36°10E), Kenya from 1972 to 1984 the oldest ringed bird recorded was in the April of its ninth year (3130 d between ringing and retrapping, Pearson (1987)). Although many hundreds of birds from 1972–74 were theoretically at risk, if alive, during

1982–84, none was caught. Cramp & Simmons (1983) give a similar figure of 8 years and 10 months for the oldest known ringed individual of this species. This was a bird ringed in Finland as a juvenile on 30 August 1963 and retrapped on 25 July 1972 (Rydzewski 1978). It is therefore noteworthy that on 23 September 1989 a Little Stint was retrapped at the Magadi site which had been ringed 11 seasons previously, on 19 May 1979 (3780 d between ringing and retrapping). This individual was ringed as a full-grown bird, and was therefore at least 11 years and 2 months old when retrapped, probably a longevity record for this species. It had also been retrapped in March 1983. The catch of Little Stints of 23 September 1989 totalled 40 birds. This included four retraps: apart from the individual noted above, these had been ringed in December 1988, October 1986 and October 1983.

The same September 1989 Magadi catch included a Chestnut-banded Sandplover *Charadrius pallidus* which had been ringed as an adult ten seasons previously, in February 1980 (3514 d). This is not, however, the longest retrap interval in this species. An adult ringed at Magadi on 1 October 1972 was caught again in May 1983 (3877 d), while another adult ringed in August 1973 was caught 13 years later in October 1986 (4824 d).

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A second Kenya record of the Red-necked Stint *Calidris ruficollis*

During the afternoon of 19 July 1987 a small wader was noticed feeding beside the causeway at Lake Magadi, Kenya. It was in full plumage, and evidently an adult Red-necked Stint *Calidris ruficollis*. The only Palaearctic wader present in the area at the time, it was watched in excellent light at distances down to 25 m with a Bushnell x20 telescope.

The head was all round brick red, uniform from the sides of the face to the upper chest, and sharply demarcated against the white of the underparts. Fine black streaks were confined to the sides of the chest. There was a small white patch on the chin. The supercilium was practically obscured by the brick-red face. The crown was finely streaked, the ground colour more buff than the rest of the head. The overall appearance of the upperparts was very dark with extensive blackish centres to mantle and scapular feathering and to buffy-edged wing coverts. The bill was entirely black; it tapered to the tip from a broad base, and appeared stouter than in Little Stints *Calidris minuta* found nearby next day. The legs were black. In overall appearance, the bird seemed more solidly built, shorter necked and perhaps shorter legged than a Little Stint. It was eventually disturbed by children and left the area. It could not be located next day.

The only previous known occurrences of this species in eastern Africa, apart from birds in Natal, South Africa, were in Kenya at Ngomeni (coast) in May 1981 (Taylor

1981), and in Somalia in April 1979, May 1980 and May 1981 (Ash 1983).

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Scopus 13: 120–121, October 1989 Received 13 July 1989

A new Kenyan breeding site for the Avocet *Recurvirostra avosetta*

Populations of the Avocet *Recurvirostra avosetta* that are resident in the Afrotropical region are known to breed in several areas of southern Africa, in Kenya and north-eastern Tanzania, and in the Awash Valley of north-eastern Ethiopia (Urban *et al.* 1986). Instances of breeding in Kenya are confined to an old record from Lake Nakuru (Jackson 1938), and annual nesting of small numbers around Lake Magadi (Britton 1980, EANHS nest record cards). Another old record, of large numbers breeding on freshwater marshes near Nyeri, 0°25S, 36°57E, (Mackworth-Praed & Grant 1957), is considered doubtful (Lewis & Pomeroy 1989).

A third Kenyan breeding site was discovered on 28 June 1989 about 1.5 km west of Amboseli Lodge (2°39S, 37°16E), along the main Ol Tukai–Namanga road. The habitat consisted of a deeply rutted stretch of this road, which had been flooded to form small lagoons within which the road's ridges between the wheel-ruts, emerged a few centimetres above the water level to form long narrow islands of bare mud.

About ten adult Avocets were present, including two individuals which, sitting motionless on the narrow spits, may have been incubating. Positive evidence of breeding was provided by two flightless chicks, about one third grown, that were moving together along one of the muddy margins.

Although the other Kenyan breeding records are from the shores of large, permanent soda lakes within the rift valley, the low islands in these temporary lagoons provide a similar habitat. The water is most probably saline, since the soils of the Ol Tukai area are generally salty, and saline encrustations were present on the soil surface nearby. The date conforms to the June–July breeding peak given for Kenya and Tanzania by Brown & Britton (1980).

The road has diverted around this flooded area, and the birds showed no sign of being disturbed by the passage of numerous motor vehicles only 10 m or so away. Since this area is within the Amboseli National Park, however, very few, if any, pedestrians pass along this stretch.

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Range retraction of the White-eyed Gull *Larus leucophthalmus* from the eastern coast of Africa

The White-eyed Gull *Larus leucophthalmus* is virtually restricted to the Red Sea and the Gulf of Aden. Although present in most parts of this range throughout the year, there are pronounced movements in the spring and autumn.

The shift is northwards during the northern summer, when birds reach the Gulf of Aqaba and are numerous in the Gulf of Suez (Cramp & Simmons 1983, Hollom *et al.* 1988). Breeding data are apparently few. Alexander (1963) mentions July–September "egg-dates", but Harrison (1983) considers these imperfectly known, noting that breeding is perhaps during June–September. Nikolaus (1987) records egg-laying on the Sudan coast in August. From October/November to March/April, there is a return to the south and east, when the species becomes scarce in the northern reaches of its range but abundant in the Gulf of Aden (Cramp & Simmons 1983, Urban *et al.* 1986, Nikolaus 1987).

Vagrants to the south and east of the normal range appear to be associated with these movements. A single immature reached Lake Turkana in northern Kenya during early April (Hopson & Hopson 1975), and stragglers to the island of Masirah, off the southeastern coast of Oman, were in April and October (Cramp & Simmons 1983). Reports from far south along the eastern seaboard of Africa have come from southern Mozambique (20°S) during January 1947 and March 1972, and from South Africa (34°S) in January 1962. These southern African occurrences are quoted by Cramp & Simmons (1983), but doubted by Harrison (1983) and considered erroneous by Urban *et al.* (1986).

Hitherto unpublished records show that this gull formerly extended south to coastal Kenya (4°S) with some regularity. The birds were seen from the early 1950s to the mid-1960s during the February–early May period (though possibly not annually), at Horne's Reef (4 km north of Kilifi) and at Kanamai (20 km north of Mombasa). Precise dates for the occurrences at these two localities were not kept since the regularity of the birds made them commonplace; but there were single records a little further south at Nyali (Mombasa) and Diani Beach (4°18S), on 2 February 1956 and 14 April 1958, respectively.

The birds were mainly adults, often observed at distances down to 20–30 m, and they were invariably perched amongst flocks of the much commoner Sooty Gull *L. hemprichii*. Their most obvious field characters were the deep red bill (dusky towards the tip), the white patch above and below the eye and, less obvious, their slightly slimmer build when compared with the Sooty Gulls. Three to six White-eyed Gulls in a flock of 20 or 30 Sooty Gulls was not unusual. The tendency for these two species to associate with each other is well known (Urban *et al.* 1986, Hollom *et al.* 1988).

The seasonality of these records agrees with that of the species' southwards shift mentioned above. The regular occurrence of this gull south to Kenya lends more credence to the reports from Mozambique and South Africa, which were also during this season of the year.

What is quite clear, however, is that the White-eyed Gull has disappeared from these eastern coasts of Africa in recent years. The most recent of the far southern vagrants was in 1972, a few years after the Kenyan records quoted here. At the present day, Ash & Miskell (1983) mention the species south only to 10°N on the coast of Somalia, some 1000 km north of the Kilifi–Mombasa area. Furthermore, there have been no records from competent observers based in the Mogadishu (coastal Somalia at 2°N) and Kilifi–Mombasa areas in recent years, and particularly interested in gulls and terns. Interestingly, while the White-eyed Gull has been retracting its range from eastern Africa, several Palaearctic larids, most notably the Black-headed Gull *L. ridibundus* and the Herring Gull *L. argentatus*, have been extending southwards into this region (Lewis & Pomeroy 1989).

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Black-naped Tern *Sterna sumatrana*: first record for East Africa

During a visit to Latham Island, Tanzania (6°54S, 39°56E) on 22 November 1987, we noticed several small terns flying offshore. The most striking features were their whiteness, small size and rapid wing beats, the last producing a wader-like, direct flight. They looked as small as Little Terns *Sterna albifrons* which are common on the mainland coast, but they were heavier with broader, less slender wings. Black on the wing-tips was restricted to the leading edge of the outer primary. Nine birds landed on the beach for

several minutes giving us excellent views at about 30 m range. They had black bills and blackish legs. All had a black band extending through the eye to the nape, but there was no streaking on the crown. The black band varied in width in individual birds. All appeared to be in adult plumage. They were identified as Black-naped Terns *Sterna sumatrana*. During the next hour they were seen several more times, flying just beyond the shoreline, and giving an impression at times of miniature Crab Plovers *Dromas ardeola*.

The species breeds on several western Indian Ocean islands including Astove, the Amirantes and Aldabra (Penny 1974) and although there are no previous records of this species from East Africa, it has occurred as a vagrant in South Africa (Natal) and southern Mozambique (Clancey 1980).

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Notes on the breeding behaviour of the Red-fronted Tinkerbird *Pogoniulus pusillus* in Somalia

The following observations were made on the west bank of the Webbi Shabelle about 25 km south of the town of Beledweyne, Somalia, at approximately 4°33N, 45°17E. The area is characterized by two rainy seasons, in April–May and October–November, and is generally hot and dry with only *c*. 250 mm of rain per year. The vegetation along this part of the river is dominated by large *Acacia tortilis* and *A. nilotica* trees, with some *Ficus* sp. and *Hyphaene* sp., and thickets of *Salvadora persica* and *Balanites rotundifolia*.

On 26 April 1984, an adult Red-fronted Tinkerbird *Pogoniulus pusillus* was observed excavating a hole in the underside of a dead branch of a large living *Acacia tortilis* tree. At the time the hole was perhaps 1 cm deep. On a later visit it was found that the hole had never been completed.

Ten months later, on the morning of 25 February 1985, a nest was located in the underside of another branch of the same tree. This branch was a broken dead stub about 5.5 m above the ground. Attention was called to the nest by the quiet but repeated 'tinking' of what sounded like at least two young birds. A few hours later the tree was visited again, and a young tinkerbird was found on the ground below the hole. Its body feathers were complete except for the head, which was still partly bare, with no evidence of the characteristic red forehead of the adult. The wing and tail feathers were nearly fully grown, with only the primaries still showing a bit of the sheath. The bird appeared to be healthy when found, but was never seen to be approached by an adult, and was dead by nightfall.

The next morning only one young bird was heard calling from the nest hole, and at least one adult was seen entering and leaving. The following day the nesting tree was visited again, but no sound was heard from the nest hole; instead, the fledgling was located by its call about 1.25 m up in a dense clump of *Salvadora persica*, about 18 m away. It called regularly and was seen to regurgitate a large very sticky white seed, which it wiped off its bill on to the branch on which it was perched. Its plumage was identical to that of

its sibling found on the ground two days before, with no sign of the red forehead. An hour and a half later the fledgling was gone, but a second, slightly larger, pale yellow and orange seed was found stuck on the branch next to the white seed which had been regurgitated earlier. The fact that this bird fledged on 25 February indicates that egg-laying must have occurred sometime during the second half of January, in the middle of the dry season.

On 13 April 1985, an adult tinkerbird was seen enlarging, or perhaps cleaning, the same nest hole. The site was not visited again until 5 June when what sounded like two young birds were heard calling from the same hole. These young birds were never seen, but an adult bird was observed in the entrance hole. The bird was watched for *c.* 15 min, during which it occasionally disappeared into the hole for a few seconds, and then reappeared in the entrance. It was observed to regurgitate several greyish seeds, and accepted some fairly large orange fruits from a second adult. Egg-laying in this case must have occurred sometime in mid-May, during the second half of the rainy season.

Short and Horne, in Fry *et al.* 1988, mention that the Yellow-rumped Tinkerbird *Pogoniulus bilineatus* may raise several consecutive broods in the same season using the same hole, and that the Moustached Green Tinkerbird *P. leucomystax* occasionally raises two broods a year with two months between broods. But to the best of my knowledge *P. pusillus* has not previously been recorded breeding twice in the same year. In this case the two broods must have been started about four months apart, with one raised in the dry season and the other in the following rainy season.

I would like to thank Dr Lester Short for reading an earlier draft of this note.

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Blue Swallows *Hirundo atrocaerulea* near Busia: the second record for Kenya

On the morning of 22 August 1988, the author investigated a small area of scrub and rank grassland by a stream 2 km east of Mungatsi (0°28N, 34°19E) on the Mumias–Busia road in western Kenya. An all dark swallow flying low over the grass proved to be wholly shiny blue with tail streamers nearly as long as the body, and was clearly a Blue Swallow *Hirundo atrocaerulea.* A search of the area revealed more birds of this species in other small patches of grassland, but never more than three together, although a total of eight to ten was suspected. The birds were watched skimming low over the ground and resting on tall grass stems. At one point, two birds seemed to be displaying in flight, one—a male?—fluttering over the other with tail streamers splayed. The following evening, the area was visited by D.A. Turner and D.A. Zimmerman, who found at least twelve Blue Swallows, apparently coming in to roost. On 24 August, further observations were made by A.D. Forbes-Watson and G.S. Keith. However, when the area was checked again on 19–20 September no birds could be found.

The Blue Swallow is known as a non-breeding visitor to Lake Victoria areas of Uganda. Britton (1980) gives its range in Kenya as Mumias, Busia and Bungoma, but this gives a false impression of previous properly documented records. Until now, the only

reliable Kenya record seems to be an August bird collected by Jackson at Mumias at the turn of the century (Jackson 1938, who, incidentally, gives the distribution incorrectly as "eastern" Kenya, although only citing the *western* Kenya locality of Mumias; "eastern" is clearly a misprint). It is, however, possible that this very limited piece of undisturbed habitat in an otherwise heavily cultivated area provides a regular wintering site in western Kenya for these southern African breeding birds.

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The existence of a form of cliff swallow *Hirundo* sp. in Ethiopia

Whilst leading a birdwatching tour to Ethiopia in November 1988 we came across a small party of unfamiliar hirundines which were clearly a type of cliff swallow. They were observed well each morning of our stay at Kereyou Lodge in the Awash National Park (8°58N, 39°54E). A second party of English birdwatchers followed our visit, and they not only saw some of the birds we had seen in Awash, but also discovered a larger flock feeding around the cliffs by Lake Langano (7°35N, 38°45E) in the Rift Valley, some 180 km south-west of Awash.

The birds were first noticed by SCM while examining a mixed flock of feeding hirundines (chiefly Eurasian Swallows *Hirundo rustica*, but with several Striped Swallow *H. abyssinica*, Red-rumped Swallows *H. daurica*, and House Martins *Delichon urbica*) through a telescope over the edges of grassland near the impressive gorge, a little to the west of the lodge. At least six birds were watched for considerable periods through mounted telescopes at ranges of about 500 m to 1 km in clear early morning light on 11 and 12 November; one of the swallows also briefly came within 50 m of C-G. Cederlund, J. Stigh and P. Gadd in the early afternoon of 11th at Kereyou Lodge verandah (which overlooks the gorge); later the same afternoon we also found two birds flying over grassland some 3 km away from the original site. We left Awash on 12 November, but when a second party of English birdwatchers (including G. Edwards and I. Lewis, who have supplied their notes) arrived on 3 December, they found three birds in the same area, having previously located a flock of some 20–24 birds by the cliffs at the western shore of Lake Langano on 30 November.

Description

(From notes made by the authors, with amendments as credited; differences noted may have been due to individual plumage wear or to varying viewing conditions.)

SHAPE AND FLIGHT ACTION

Small to medium, stocky swallows with tail only shallowly forked. The tail had a small central notch, appearing almost square-ended when closed but showing a distinct, shallow fork when partially spread (i.e. when the bird was executing turns in flight). Wing shape

and flight action similar to those of the African Rock Martin *Hirundo fuligula*. Flight action relatively fluttering, with frequent turns and periods of gliding in between bouts of fluttering. Kept to the lower elements of a large flock of mixed swallows feeding over grassland and the edge of a gorge. The Langano birds fed around the cliffs in the early morning, moving up and down the cliff face, swirling about catching flying insects, and even alighting for brief periods (G. Edwards).

PLUMAGE

Crown, sides of head and neck blackish; no rufous visible, although looked for during the one very close view. Throat dark at the sides of neck with pale centre (although seemed quite dark at long range), GE noted throat, chin and upper breast very pale ad clean of any markings, with a weak smudging of greyish-buff at sides of breast, not forming a complete or even a strong partial, breast band. Breast, belly and flanks whitish (greyish-white, somewhat darkening towards throat—C-G. Cederlund), with buffish or pale rufous wash, (darkening on undertail coverts—CE). Underwing coverts similarly whitish washed with pale rufous or buff, contrasting with dark undersides to primaries and secondaries (pattern similar to *H. rustica*'s). Whole upperparts blackish including crown and nape, with bluish gloss at least on wing coverts and mantle (seemingly also extending to crown—CE). Strongly contrasting uniformly pale rufous rump (pale buff to pale pink depending on light—CE); uncertain whether rufous extended to upper tail coverts or not. Tail all dark above and below, with no sign of any pale mirror spots although tails were seen well from above and below, fanned and closed.

Discussion

The birds were clearly cliff swallows, i.e. belonging to the *Hirundo spilodera* superspecies of Hall & Moreau (1970): their rufous rumps, shallowly-forked tails and overall rather stocky appearance and fluttering flight action reminded several of us of the American Cliff Swallow *H. pyrrhonota*. However, no form of cliff swallow has ever been reported from Ethiopia (Urban & Brown 1971, J.S. Ash, pers. comm.). Comparing our birds with the four species (or perhaps subspecies) recognized in Africa (Hall & Moreau 1970, Fry & Smith 1985), the lack of tail spots is a feature shown only by the South African Cliff Swallow *H. spilodera* and the newly described Red Sea Cliff Swallow *H. perdita*. In any case, the two West African species, *H. preussi* and *H. rufigula*, are both distinctly smaller as well as differing in other features.

Comparison with Red Sea Cliff *Hirundo perdita*

On range probability we at first suspected that we had discovered *H. perdita*, but comparing the Ethiopian birds with the type description and photographs there were major differences. *H. perdita* is described as having the rump "dark-grey with white bases and white fringes; most of the feathers have the white fringe (1–2 mm wide near rachis) abraded away" (Fry & Smith 1985). The rump was clearly pinkish-buff or rufous in our Ethiopian birds. The type specimen of *H. perdita* (from Sudan) had an all black throat with a pale chin spot; although at long ranges the throats of the Ethiopian birds often appeared dark, closer views showed this not to be the case; the throat centre was pale to the chin, and there was an ill-defined dusky-buff partial breast band. A re-examination of the photographs taken of the type specimen of *H. perdita* (supplied by D. A. Smith) actually shows a suggestion of brown or warm buff-brown fringing to dark feathers of the upper rump which does not show well in the reproduction of the colour slide included in the description of the type (Fry & Smith 1985). It is possible, perhaps, that the rump might

have more extensive brownish or brownish-buff feather fringes in fresh plumage (although unlikely to be pale rufous or pink). No plausible explanation could account for the difference in throat colour, however.

It has been speculated that *H. perdita* might well be found breeding in the Sudan or Ethiopia (Fry & Smith 1985). However, Smith (pers. comm.) informs us that during a considerable migration of Eurasian Swallows (500 h^{-1}) at Sanganeb (19°43:30N, 37°26E) in early May 1983 he had noticed two strange pale-rumped swallows heading out over the Red Sea in the direction of Jeddah just prior to his discovery of the dead type specimen of *H. perdita*. He speculates that it is also possible that the species might be found breeding in hills fringing the Red Sea coast of western Saudi Arabia to the north of Jeddah.

Comparison with the South African Cliff Swallow *H. spilodera*

Turning to *H. spilodera*, which has been found spending the austral winter as far north as western Zaïre, we find that the Ethiopian birds most closely resembled this species. *H. spilodera* is known to vary according to age and feather wear, but the apparent lack of rufous on the forehead and lores and deep (possibly glossy) black head and neck do not comply with typical *spilodera*. In addition, *spilodera* invariably shows some white markings on the mantle which were lacking in the Ethiopian birds. Examination of skins at the British Museum at Tring showed considerable plumage variation on the underparts. Most birds had a pale buffy throat, with a variable amount of black spotting, and a rufous breast. A very prominent feature was the black markings on the breast, in others it was limited to a few black smudges or blobs, but all the specimens examined showed some black breast spots. The rest of the underparts were buffy-white and the undertail coverts rufous. This underpart pattern is distinct from the Ethiopian birds.

It would indeed be surprising to find small 'flocks' as far north as central Ethiopia (some 2600 km north-east of their previously known limit). South African Cliff Swallows breed between September and March (Maclean 1985), therefore small parties so very far from their normal range within the breeding season seems extraordinary.

We can only suggest that the Ethiopian birds represent an undescribed taxon which is closely related to *H. spilodera*, and perhaps conspecific with it. It may also provide the 'link' between *H. spilodera* and *H. perdita*. A parallel situation exists in the case of the assemblage of three long-clawed larks *Mirafra ruddi*, *archeri* and *sidamoensis* where two occur in very restricted ranges in Somalia and Ethiopia while the third is found in South Africa (Ash & Olson 1985). In addition, a few species of mainly southern African distribution, such as the Wattle Crane *Grus carunculatus* and the White-winged Pygmy Crake *Sarothrura ayresii*, have discrete, relict populations in the highlands of Ethiopia (Urban & Brown 1971).

Conclusions

Small parties of cliff swallows of unknown identity were discovered at two different sites in central Ethiopia in November and December 1988, comprising some 30–35 individuals. It is speculated that although most similar to the South African Cliff Swallow *H. spilodera*, they differ in having a very pale unmarked throat and breast, with a weak, darker smudge at the sides of the breast, blacker crown and nape and appear to lack rufous on the head or pale markings on the mantle. They differ from the type description of the Red Sea Cliff Swallow *H. perdita* in having a rufous or pinkish-buff rump, not mottled dark grey and whitish, and pale (not black) throat. It is suggested that they might well be of an undescribed taxon closely related to *H. spilodera* and perhaps providing a link between that species and *H. perdita*. It is also suggested that *H. perdita* could be found

breeding in western Saudi Arabia rather than in the Sudan or Ethiopia.

Acknowledgements
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Notes on two ravens *Corvus* spp. in Kenya

Sympatry

The Fan-tailed Raven *Corvus rhipidurus* and the White-necked Raven *C. albicollis* are members of a superspecies which replace each other in the northern and southern tropics of Africa respectively (Hall & Moreau 1970). With the exception of a vagrant White-necked Raven in extreme south-eastern Sudan (Nikolaus 1987), their ranges meet and overlap only in the far east of Uganda and along the northern and eastern margins of the Kenya highlands (Britton 1980, Lewis & Pomeroy 1989). These two ravens are mainly allopatric, however, and the literature contains but a single record of their occurring together, at an altitude of 2600 m around the summit of Mt Nyiru (2°08N, 36°51E) (Britton 1980).

The coexistence of these two ravens on Nyiru is due to the fact that it is one of a series of similar peaks (the Ndoto and Mathews Mts, and also the Maralal massif) which bring ecosystems typical of Kenya's highlands deep into the country's northern deserts. The White-necked Raven is at the northernmost extremity of its Kenyan range around Nyiru's upper slopes, while the lower slopes of the mountain are far into the northern lowlands so favoured by the Fan-tailed, whose typical altitudinal range is 400–1500 m (Britton 1980). This juxtaposition of two similar, cliff-loving and aerial species on a relatively inextensive highland makes their occurrence in mixed flocks likely.

Recent records show that these ravens also overlap with some regularity on the northern periphery of the Kenya highlands, where the ecosystems mentioned above are again brought into close proximity by rapid changes in relief. This seems to be particularly the case where the Kerio Valley (0°30N, 35°37E), a section of the eastern rift, brings a sliver of dry bush country at 1000–1200 m deep into the highlands' 2000+ perimeter. Fan-tailed Ravens, resident on the Kerio's cliffs, make daily flights up into the adjacent townships of Kabarnet (2050 m) and Iten (2200 m), on the Kerio's shoulders, to scavenge refuse. White-necked Ravens, resident in the surrounding high country, may meet with Fan-tailed Ravens in and above these settlements with some regularity.

On 26 August 1989, a large flock of soaring corvids just to the south of Iten contained at least 25 Fan-tailed and an equal number of White-necked, plus ten Pied Crows *C. albus*. In Iten itself, further numbers of both raven species were walking around foraging, in several cases in immediate proximity to each other, with no sign of interspecific aggression.

T. Stevenson and J. Roberts (pers. comm.) have several times seen White-necked Ravens flying over Kabarnet, and on at least one occasion they formed aerial flocks with the Fan-tailed species.

This coincidence of the two raven species decreases away from the conjunction of their habitats. Thus, around nearby Lake Baringo, at an altitude of *c.* 1000 m in the rift valley floor, the Fan-tailed is a common resident while the White-necked is a very uncommon and irregular visitor, and the two have never been seen together (Stevenson 1980 and pers. comm.).

The Fan-tailed Raven's incursion into the Kenya highlands reaches its southernmost limit with birds resident on the cliffs of the great Menengai volcano (0°12S, 36°04E, altitude 2200 m), in the rift valley floor above Nakuru.

Gleaning ectoparasites from ungulates

At Lake Baringo Club on 26 August 1989, Fan-tailed Ravens persistently perched on the backs of a goat *Capra* sp. and a domestic camel *Camelus* sp., gleaning ectoparasites from areas of the mammals' bodies they could reach. The birds continually pecked at the animals' coats, pulling out tufts of hair and then letting them fall to the ground, and throwing their heads back a little to swallow prey items. No positive identification of the parasites could be made. In their review of African birds feeding in association with mammals, Dean & MacDonald (1981) note such behaviour in the Pied Crow and White-necked Raven, and also in the Cape Rook *C. capensis*, but make no mention of the Fan-tailed Raven. Interestingly, they note that the Brown-necked Raven *C. ruficollis* perches on the backs of mammals but does *not* appear to eat parasites.

The Fan-tailed Raven's breeding season

Samburu Lodge (0°35N, 37°32E) usually supports a substantial scavenging population of Fan-tailed Ravens, but there were none there during my visits on 14 May 1987 and 13 June 1989. A couple of individuals were around the Lodge on 21 July 1989, and the usual numbers were present nine days later.

This May to mid July absence presumably represents the period when they are confined to the vicinity of their breeding cliffs, during nesting. This period agrees with those of the very few breeding records for the species from Kenya, i.e. June egg-dates at Kapsorwa and Kalokol (EANHS nest record cards), and January–June nesting at Baringo (Stevenson 1980).

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Scopus 13: 129–131, October 1989 Received 26 September 1989

Description of the nest and eggs of the Mountain Illadopsis *Trichastoma pyrrhopterum*

The Mountain Illadopsis *Trichastoma pyrrhopterum* occurs in medium altitude and montane forests (1550–2800 m) in central and western Kenya, eastern and south-western Uganda, western Tanzania, and eastern Zaïre (Mackworth-Praed & Grant 1960, 1973, Britton 1980). Although Brown & Britton (1980) indicate two East African breeding records for this species, these are apparently based upon indirect evidence of breeding (e.g., birds carrying nest materials, adults feeding fledglings, enlarged gonads). Chapin (1953) mentioned that the nesting habits were unknown although he gives a record of a juvenile some two weeks out of the nest west of Uvira, Kivu (3°24S, 29°08E) on 17 July. We believe the following to be the first description of the nest and egg of this species.

On 3 February 1989 we found a Mountain Illadopsis nest at 2100 m altitude in the Impenetrable (Bwindi) Forest of south-western Uganda (0°03S, 29°47E). The nest was located 1 m from a little-used footpath in montane forest. It was 1.4 m above the ground on top of a ledge that was covered with dead leaves and dense vegetation. The site was in heavy shade on a steep slope about 15 m above a small stream. An open area densely covered with *Mimulopsis solmsii* and *Sericostachys tomentosa* was 3 m from the nest, between the nest and the stream. Dominant trees in the area were *Strombosia scheffleri*, *Chrysophyllum gorgungosanum*, *Tabbernaemontana holstii*, *Symphonia globulifera*, *Myrianthus arboreus* and *Fagara* sp. The tree canopy reached to about 38 m.

The cup-shaped nest was embedded 5 cm into dead, dry leaves which overlaid about 10 cm of damp, decaying leaves on top of the ledge. The outer cup was about 50 per cent green moss. This was interwoven with dry tree leaves and the dry leaves and stems of herbs. The outside diameter and depth of the nest were 10 cm and 4 cm, respectively. The cup of the nest was 5 cm in diameter, 2 cm deep, and thinly lined with dry rootlets and moss. Fern leaves, and dead tree leaves caught in the base of the fern, hung over the nest. The nest was kept from sliding off the ledge by the depression in the leaves and by a small sapling. It was extremely well hidden, camouflaged, and protected from hail and rain.

Two eggs were present (17 x 20 mm and 17 x 23 mm). Each was very pale blue-green with brown and purplish-brown splashing covering about 10 per cent of the surface, being denser at the large end.

When the nest was next visited on 25 February we found that it had been pulled 12 cm from its original location and it was empty. Almost certainly it had been raided by a predator. We collected the nest for deposit in the National Museums of Kenya, Nairobi.

Nests and eggs are described for four other members of the genus *Trichastoma* (*T. albipectus*, *T. cleaveri*, *T. fulvescens*, *T. rufipennis*) (Chapin 1953, Mackworth-Praed & Grant 1960, 1973, Butynski 1989). All have nests which are loose, shallow cups of dead, often damp and decaying, leaves. The nest of *T. pyrrhopterum* differs in being a substantial, sturdy structure made primarily of green moss. The size and number of eggs in a clutch (two) are as reported for the other four species. The eggs differ, however, in that they are not primarily white, whitish or pinkish-white, but rather very pale blue-green.

The three breeding records for *T. pyrrhopterum* in East Africa show it breeding in Uganda during February (this record) and May (two records in Brown & Britton 1980). Combining the present record with those in Butynski (1989) we find that, of 26 breeding records for this genus in East Africa, 25 of the 26 are for the seven months from November to May. Although the present record for *T. pyrrhopterum* is for the middle of the region's minor dry season, most records for the genus are during the second half of the two wet seasons, i.e., November–December and April–May.

Acknowledgements
Our field studies are supported by the World Wildlife Fund, USAID and CARE. We thank the Uganda National Research Council, President's Office, Game Department and Forest Department for permission to work in the Impenetrable Forest.

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Scopus 13: 131–132, October 1989 Received 26 May 1989

First nest record for the Equatorial Akalat *Sheppardia aequatorialis*

The Equatorial Akalat *Sheppardia aequatorialis* is a shy, little known bird of the dense undergrowth of mid altitude and montane forests in western Kenya, south-western Uganda, southern Sudan and eastern Zaïre. Chapin (1953), Mackworth-Praed & Grant (1960, 1973) and Brown & Britton (1980) had no breeding records for this species although breeding is recorded in January, April and November from the Imatong Mts by Nikolaus (1987).

On 22 January 1989 we found the nest and eggs of this species at an altitude of 2150 m in the Impenetrable (Bwindi) Forest of south-western Uganda (0°03S, 29°47E). The nest, located 30 cm from a little-used footpath, was 0.5 m above the ground in a cleft formed by the small buttress of a 1.1 m diameter-at-breast-height, 40 m tall *Chrysophyllum gorungosanum* tree. It was set back about 12 cm into the cleft and situated on top of a small fern and the debris caught by the fern. About 25 cm above the nest was a second small fern that provided a ceiling. A very dense clump of vegetation, composed of the herb *Sericostachys tomentosa*, lianas, and a small strangler fig *Ficus* sp., sheltered the nest. Considerable additional cover was provided by the canopy of the nest tree and several neighbouring trees and bushes. Thus, the nest was in extremely dense shade, well hidden, and probably completely protected from rain and hail. The site was in a small, relatively dense grove of trees (*Newtonia* buchananii, *Symphonia globulifera* and, particularly, *C. gorungosanum*). This grove was surrounded by a relatively open area covered with a dense ground layer of the herbs *S. tomentosa* and *Mimulopsis solmsii*.

The nest was cup-shaped. The outside was 10 cm in diameter, 3 cm deep and comprised entirely of soft, green moss. The inside was 7 cm in diameter, 2 cm deep and lined only with dry, brown moss stems.

When found, the nest held two eggs, both pale brownish-grey with heavy purplish-brown blotches concentrated towards the large end. The eggs were not measured. When we returned to the nest on 31 January there were two nestlings about 2–3 days old. They had orange-yellow gapes and grey to black down on the feather tracts. On 3 February the nest cup was filled by the nestlings. Their dark grey feathers were about half grown. Orange-buff spots tipped the feathers of the chest and dorsal surface, including the head and tail.

A final visit to the nest was made on 25 February when it was intact and undisturbed, suggesting that the nestlings had fledged successfully. The nest was collected for deposit in the National Museums of Kenya, Nairobi.

Acknowledgements

Our field studies are supported by the World Wildlife Fund, USAID and CARE. We thank the Uganda National Research Council, President's Office, Game Department and Forest Department for permission to work in the Impenetrable Forest.

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 Received 26 May 1989

Great Grey Shrike *Lanius excubitor* in the Ilemi Triangle

During the mid morning of 17 February 1988 a Great Grey Shrike *Lanius excubitor* was found 18 km south of Kibish, in the Ilemi Triangle, Kenya/Sudan border area at *c.* 5°20N, 35°40E. It was watched for about 15 min in good light, perched at 15–30 m on the tops of Acacia bushes in low flat country. Twice it flew about 50 m to a new perch.

A largish shrike with a large, fairly long and well hooked bill, it had pale grey upperparts. A black face mask included the loral region and ear coverts and passed just above the eye. The cap and forehead were pale grey to the top edge of the bill, and there was no white supercilium. The bill was horn coloured. The wings were black with a large white speculum, and in flight showed a white band right the way across. The grey mantle was bordered by whitish outer scapulars, which formed a band against the black wing. The rump was grey. The tail was medium length (for a shrike) and well graduated at the tip, black with a narrow white edge and white corners. To judge from its bill colour and the lack of any frontal band the bird was of the Palaearctic race *pallidirostris*, from Central Asia.

The Ilemi Triangle is currently policed by Kenya. There are no previous acceptable records of the Great Grey Shrike from East Africa. The nearest record in the Sudan is from 11°N, some 600 km to the north (Nikolaus 1987).

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Scopus 13: 134, October 1989 Received 12 July 1989

Leaf-stripping display by a Holub's Golden Weaver *Ploceus xanthops*

While at the Kakamega Forest, Western Province, Kenya, I had an opportunity to observe the following courtship display of a male Holub's Golden Weaver *Ploceus xanthops*. On 13 January 1988 I had noted a pair of these weavers at a nest along the Lugusida River in the forest (0°15N, 34°53E). These observations were made where the river cuts through an area mostly cleared of forest except for a strip right along the river's edge. The banks of the river were steeply sloped and had a dense growth of bushes and vines. There were three Holub's Golden Weaver nests in the area (two were about 30 cm apart and the third about 3 m away), all overhanging the river. One was incomplete and another appeared rather old. The nests were roughly spherical with a downward-facing entrance. I returned the next day and at 11:20 a male and female arrived at the bank downstream and opposite the nests. The female flew immediately into the dense thickets, out of sight, while the male alighted on an exposed horizontal vine and proceeded to display. He was in a somewhat crouched position with his tail held high and quivering up and down (Fig. 1). He continued in this display for about one minute, though he was looking about and moving along the vine all the time. He then went to an adjacent vertical vine and slowly climbed up while pulling off and dropping every leaf, all the while quivering his tail. After he had stripped

about 50 cm of the vine he stopped and displayed some more. At this point the female suddenly flew out of the thicket and the male followed. At no time did the male sing or call.

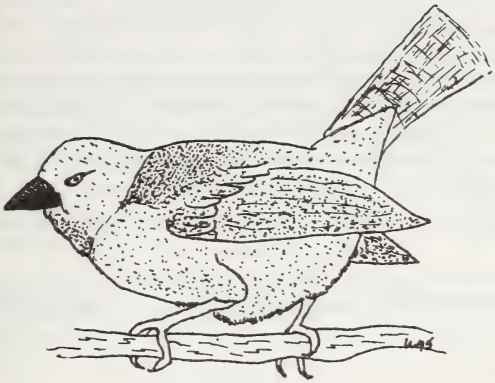

Fig. 1. *Tail-quivering of a male Holub's Golden Weaver* Ploceus xanthops *drawn from a photograph*

Mackworth-Praed & Grant (1960) suggest that this species is slightly colonial with two or three pairs breeding together but Collias & Collias (1964) consider it solitary, although the pair may build several nests. The fact that only a single pair was seen in the 80 minutes I was in the area lends support to the latter suggestion. Neither Mackworth-Praed & Grant (1960) nor Collias & Collias (1964) described any displays but Crook (1964) noted courtship chases and a "song-stretch" nest invitation display in which the male hangs below a branch near the nest with the tail held straight while making a wheezing song. The display described here clearly does not fit the one described by Crook and did not appear to be a nest invitation display, though its exact function is unknown.

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 Received 30 March 1989

Black and White Mannikins *Lonchura bicolor* eating algae

While at the Kakamega Forest, Western Province,Kenya, I observed an unusual feeding behaviour for Black and White Mannikins *Lonchura bicolor*. These observations were made on 16 December 1987 along a tributary of the Lugusida River (0°15N, 34°53E) where it flows near the edge of the forest and in an area where cattle frequently cross. Consequently, the area is very muddy and the creek forms a number of small stagnant pools in which filamentous green algae seem to thrive. A group of four adult mannikins was spotted in creepers growing up a tree when, one by one, they flew down to the ground at the edge of the creek and started feeding on the algae. It was obvious that they were feeding rather than drinking since they would periodically lift their heads and showed that they had strands of the algae hanging from their bills, which they proceeded to ingest. This behaviour continued for about two minutes until suddenly, they all flew off. I know of no other reports of algae-feeding by a granivorous bird.

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Scopus 13: 136, October 1989 Received 30 March 1989

20TH INTERNATIONAL ORNITHOLOGICAL CONGRESS 1990

Final Notice

The congress will take place in Christchurch, New Zealand, on 2–9 December 1990. The second and final circular, registration papers and forms for submitting papers may be obtained from the Secretary General, Dr Ben D. Bell, 20th IOC, School of Biological Sciences, Victoria University of Wellington. P.O. Box 600, Wellington, New Zealand (Telex NZ30882 VUWLIB; Fax: NZ 64-4-712070).

CORRECTIONS

The birds of Africa. Volume III review, *Scopus* 12: 104.
The comments regarding the kingfisher recoveries need correcting. The book's statement regarding the Pied Kingfisher recovery to Uganda is quite correct; I apologize for implying that it was not. The mention (p. 269) of the Chestnut-bellied Kingfisher recoveries, however, is not correct: the two recoveries of Ethiopian-ringed birds were both to Kenya—to near Kisumu (963 km) and near Mombasa (*c.* 1747 km), not to Uganda and Kenya.

Ed.

East African Bird Report 1987, *Scopus* 11: 106.
The Gull-billed Tern *Gelochelidon nilotica* was included under the Afrotropical species heading by mistake; it should, of course, have been listed in the Palaearctic section.

Ed.

Contributions, which will be acknowledged, should be typed in one-and-a-half or double spacing on one side of the paper only, with wide margins all round, and should be sent in duplicate. Hand-written MSS will also be considered but they must be clearly written, and sent in duplicate too. Both English and scientific names of birds should be given when the species is first mentioned, thereafter only one name should be used; they should be those of a stated work and any deviations from this work should be noted and reasons given. Metric units should be used. Contributions will be welcomed on floppy disk—please contact the Editor for details.

Original black and white photographs and line illustrations should not be larger than A4 (210 x 297 mm). Line illustrations should be on good quality white paper or board, or on tracing material; lettering should be of professional quality or marked lightly in pencil. Each illustration should be numbered (Fig. 1, etc.) and be provided with a legend typed on a separate sheet of paper. All references cited should be listed at the end of the contribution following the form used in this issue. *Names of periodicals must be given in full and, in the case of books, the town of publication and the publisher should be given.*

Authors of 'papers' receive three copies of their contribution free of charge. Extra copies, which will be supplied at cost, must be ordered when the MS is accepted. All contributions should be sent to the Editor, G.C. Backhurst, Box 24702, Nairobi, Kenya.

East African Bird Report

This normally forms a separate issue of *Scopus* and each report covers one calendar year and tends to relate principally to the birds of Kenya. Records from Tanzania and Uganda are listed in separate sections. Records of Afrotropical and oceanic birds should be sent to D.A. Turner, Box 48019, Nairobi; Palaearctic bird records should be sent to Dr D.J. Pearson, Department of Biochemistry, University of Nairobi, Box 30197, Nairobi. Records should be sent in early in the new year to ensure the speedy production of the Report.

Sightings of rare birds may be telephoned through to any OSC member (numbers inside the front cover) in the hope that the bird(s) may be seen by others. Criteria covering the submission of Bird Report records are given in the *Scopus* Supplement of June 1982, and copies may be obtained, free of charge, from D.A. Turner. Records of rare birds are assessed by the independent and internationally-based East African Rarities Committee.

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East African Bird Report 1989

SCOPUS

Cover illustration from a gouache painting by Dr P.A. Clancey

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Scopus welcomes original contributions on all aspects of the ornithology of eastern Africa—the area from the Sudan south to Mozambique. Contributions will be assessed by independent referees. The material published is divided into 'papers', 'short communications', and letters. Short communications will be usually less than two pages in length.

Authors are asked to follow the conventions used in *Scopus* and to refer to a recent issue for guidance.

A few examples of conventions are: **dates:** 23 September 1991 [note the order, no

Continued inside back cover

Scopus 13 (3): 137–138, August 1991

East African Bird Report 1989

THE FORMAT OF THIS REPORT follows that established for the previous two years. A general review for Kenya, together with the systematic lists and migrant dates, followed by records from our colleagues in Tanzania and Uganda. We are indeed happy to see an increase in records from Tanzania, and sincerely hope that this trend will continue.

A Danish-ICBP wader study team continued their census of coastal Tanzanian birds (started in 1988), and the results have been published (Bregnballe, T., Halberg, K., Hansen, L.N., Petersen, I.K., & Thorup, O. 1990. *Ornithological winter surveys on the coast of Tanzania 1988–89*. ICBP Study Report No. 43, pp. 67. Copenhagen: ICBP-Danish Section.).

As we are now approaching the end of a ten-year period since the publication of *Birds of East Africa* (Britton *et al.* 1980), we feel that it is time that a revision was undertaken, to bring the taxonomy and the species accounts up to date. The East African List Committee has been charged with this responsibility, and it is hoped that the complete revision of *Birds of East Africa* will be completed within the next two years. In addition, separate rarity and requested species lists will be compiled for the three East African countries, as well as new guidelines for our contributors.

Kenya—general review and highlights

Following an unusually wet Christmas (1988) and New Year period over much of the country, the year started with many normally dry areas still quite wet and green. Lake levels throughout the Rift Valley remained slightly above average and large numbers of flamingoes returned to Lake Nakuru, if only temporarily.

The long rains started early in some western areas and by late March all appeared set for a long and successful rainy season. Small numbers of Rufous-bellied Herons *Ardeola rufiventris* remained in the Musiara swamps of the northwestern Mara GR throughout the year, while in the same area a pair of Woolly-necked Storks *Ciconia episcopus* provided the first breeding record for the country. An ominous note was the strong impression that Great Crested Grebe *Podiceps cristatus*, African Darter *Anhinga rufa*, and Grey Parrot *Psittacus erithacus* were, for reasons unknown, declining in Kenya, and steps will have to be taken to monitor closely their existing populations. Commercial fishing techniques in the Rift Valley and central highlands may be the cause of the decline of the grebe and darter. In the case of the parrot, its dwindling habitat and subsequent reduction in available nesting sites are no doubt to blame for its decline.

In western Kenya numbers of wintering Blue Swallows *Hirundo atrocaerulea* increased to over 75 by mid July, and several pairs of Green Crombecs *Sylvietta virens* appeared to be resident in Mumias and Busia districts.

Highlights of the year were the first records of Arabian Bustard *Otis arabs* and Magpie Mannikin *Lonchura fringilloides* for over fifty years (both records substantiated by fine photographs); a second record of the Shy Albatross *Diomedea cauta* (also photographed); and the third Kenya records of Levant Sparrowhawk *Accipiter brevipes*,

Mascarene Martin *Phedina borbonica*, and Red-winged Warbler *Heliolais erythroptera*. In addition, there were the fourth and sixth record of Eurasian Turtle Dove *Streptopelia turtur* and Dickinson's Kestrel *Falco dickinsoni* respectively, and the first records for many years of Black Tit *Parus leucomelas*, Orange-winged Pytilia *Pytilia afra*, and Red-headed Bluebill *Spermophaga ruficapilla* (central Kenya) were of major interest locally. Reports of Quail Plovers *Ortyxelos meiffreni* in Tsavo West National Park seem to indicate that the species is still spreading slowly south, and it is probably only a matter of time before it reaches Tanzania.

The Ngulia ringing project started slowly during late October and early November because of a lack of suitable weather, but later, in November and early December, with the start of the rains and accompanying mist at night, good numbers were caught and ringed. Ngulia attracts many interested visitors from overseas and it is hoped that bird migration work at this important will be able to continue.

Tanzania and Uganda

News from our colleagues in these two countries continues to be hard to come by and to some extent we rely on overseas visitors and tour groups for records. Only by a steady and increasing volume of data from observers in the countries themselves can we hope to obtain a true picture of the status and distribution of many species. We hope to have a clearer picture once the atlas schemes for the two countries are complete, but in the meantime we appeal to everyone in Tanzania and Uganda to send in their records, no matter how mundane they may appear. Tanzanian records of note include only the third Temminck's Stint *Calidris temminckii* ever, while a small flock of Lilian's Lovebirds *Agapornis lilianae* in the extreme south near the Mozambique border may be the first positive records for East Africa. From Uganda the highlight was the first record of the Kentish Plover *Charadrius alexandrinus*, from Queen Elizabeth National Park.

East African Rarities Committee

This group was again called upon to discuss and adjudicate a number of rarities, and we extend our deep appreciation to all members for their time, patience and understanding. A full report on their findings covering 1985–90 will be published in *Scopus* .

D. A. Turner, Box 48019, Nairobi

Species Report

Records collated by D.A. Turner and D.J. Pearson

Abbreviations used after species' names:

S(A): **Scarce species**, five or fewer East African records
S(B): **Scarce species**, six to 25 East African records
R: **Requested species**: species of special interest whose status requires clarification.
E: Records showing an **Extension of Range**
N: Records included for their **Numerical interest**
D: Records of migrants where the **Dates** are of interest
B: Records of **Breeding interest**
M: Records of **Miscellaneous interest**

Kenya: Afrotropical and Oceanic species

PODICIPEDIDAE GREBES

Podiceps cristatus **Great Crested Grebe M:** small numbers: 2–4 Lake Nakuru NP throughout year (DAT, BWF); 2 Lake Naivasha 12 Feb (DAT). Max count at Lake Nakuru: 11 5–6 Dec (EM, SJ).

Podiceps nigricollis **Black-necked Grebe R:** max >500 Lake Nakuru NP late Dec (BWF); 1 Limuru Ponds 5 Feb (MG), 1 Lake Magadi 13 Aug (MACC).

DIOMEDEIDAE ALBATROSSES

Diomedea cauta **Shy Albatross S(A):** singles (probably the same bird) off Shimoni 22, 30, 31 Aug, 2 Sep (PH); photos obtained.

Second Kenya record.

PROCELLARIIDAE PETRELS, SHEARWATERS

Puffinus pacificus **Wedge-tailed Shearwater S(B):** 1 off Watamu 20 Jul (IR).

OCEANITIDAE STORM-PETRELS

Oceanites oceanicus **Wilson's Storm-petrel S(B):** 1 off Shimoni 12 Aug (DJP).

PHAETHONTIDAE TROPICBIRDS

Phaethon lepturus **White-tailed Tropicbird S(B):** singles off Shimoni 9 Aug and 3 Oct (PH)—photos obtained; 1 off Watamu 20 Sep (DS).

PELECANIDAE PELICANS

Pelecanus onocrotalus **White Pelican M:** bred Lake Elmenteita June onwards with >5000 present end of Jun (MACC); >5000 Lake Nakuru NP 5–6 Dec (EM, SJ).

SULIDAE BOOBIES

Sula dactylatra **Masked Booby R:** 1 off Shimoni 3 Oct (PH), 1 off Watamu 7 Oct (DS).

ANHINGIDAE DARTERS

Anhinga rufa **African Darter M:** *c.* 20 Tana bridge, 3 Feb and 5 Jul but none in Nov and Dec (DAT); 1 Lake Baringo 7 Dec (EM, SJ). A fast-declining species in the Kenya highlands.

ARDEIDAE HERONS, BITTERNS

Ixobrychus minutus payesii **Little Bittern R:** 1–2 present throughout the year Ibonia estate, Kiambu (JRPC); a few Lake Naivasha 27 Jun (DAT) and 9 Dec (DAT) and singles there 8 Nov and 2 Dec (EM, SJ); 1 Usengi (Lake Victoria) 9 Apr (RB). 1 ringed Ngulia 9 Dec (GCB, DJP *et al.*).

Ixobrychus sturmii **Dwarf Bittern R:** 1 Ngulia 9 Nov (FM).

Ardeola idae **Madagascar Squacco Heron R:** records from the Nairobi area, Lake Nakuru NP, and Lake Baringo 1 May to 1 Oct (MG, ADL, TS).

Ardeola rufiventris **Rufous-bellied Heron R:** small numbers (3–8) around Musiara swamp, Mara GR throughout the year (several observers).

Egretta ardesiaca **Black Heron R:** singles Lake Baringo 8 Feb and Kisumu 11 Feb (DAT); *c.* 25 south of Ileret (Lake Turkana) 26 Jan (DJP, MACC, ALA); 2–3 Tana bridge 3 Feb, 5, 12 Mar, and 8 Oct (ABG); 2 Lake Naivasha 13 Mar (JRPC); 4 Lake Nakuru 12–29 Aug (DEW, ADL), 2 there 5 Dec (EM); small numbers Mida Creek 20 Feb (DAT) and 25 Jul (BP); >10 Lake Jipe 21, 22 Feb (DAT) and 26, 27 Dec (ABG); >18 Kerio delta (Lake Turkana) 30 Dec (MACC); 1 NW Mara GR 17 Sep (IR).

Egretta gularis **African Reef Heron R:** Lake Turkana: 1 Koobi Fora 28 Jan and 2 Allia Bay 29 Jan (DJP, MACC, ALA). Coast: 1–2 Mida Creek 20 Feb (DAT) and 1 Kilifi 21 Nov (EM, SJ). Lake Magadi: several 22 Jul to 7 Aug (DJP).

Nycticorax nycticorax **Night Heron N:** *c.* 30 near Koobi Fora, Lake Turkana, 27 Jan (DJP, MACC, ALA).

CICONIIDAE STORKS

Anastomus lamelligerus **Open-billed Stork N:** *c.* 700 moving SE near Maikona (NW of Marsabit) 12 Nov (MACC), >200 Port Victoria 15 Nov (EM, SJ), 30 Lake Nakuru NP 5–6 Dec (EM, SJ).

Ciconia abdimii **Abdim's Stork N:** 950 at Usengi (Lake Victoria) 16 Nov (EM, SJ); >50 near Wamba 26 Dec (DAT).

Ciconia episcopus **Woolly-necked Stork MB:** 2 NE of Lokichoggio 27 Jun (MACC), 3 Suguta Marmar 8 Aug (DEW), 1 Samburu GR 22 Aug (ADL), 2 Nairobi NP 15 Oct (MG), 6 Mara GR 3–4 Dec (EM, SJ). Breeding reported along the Mara River (ML).

THRESKIORNITHIDAE IBISES, SPOONBILLS

Bostrychia olivacea **Green Ibis R:** seen daily Kieni Forest, southern Aberdares, at dusk and dawn throughout the year (DAT); Mt Kenya Met. Station: 3 on 4 Mar (RB), 2 on 21 Jul (TS) and 2 at Mountain Lodge 10 Aug (TS).

Plegadis falcinellus **Glossy Ibis N:** >100 Mwea Rive Scheme 9 Nov (DAT).

Platalea alba **African Spoonbill N:** 240 Lake Nakuru NP 5–6 Dec (EM, SJ); >60 Lake Magadi 11 Dec (EM, SJ).

PHOENICOPTERIDAE FLAMINGOES

Phoeniconaias minor **Lesser Flamingo N:** 2.5 million Lake Nakuru 5–6 Dec (EM, SJ).

ANATIDAE DUCKS AND GEESE

Dendrocygna bicolor **Fulvous Whistling Duck N:** >500 Tana Bridge, Nairobi–Nyeri road, 12 Dec (EM, SJ).

Dendrocygna viduata **White-faced Whistling Duck N:** >120 Tana Bridge, Nairobi–Nyeri road, 12 Dec (EM, SJ).

Anas capensis **Cape Wigeon N:** 60 Lake Nakuru NP 5–6 Dec (EM, SJ).

Anas undulata **Yellow-billed Duck N:** 70 Lake Naivasha 8–9 Nov (EM, SJ).

Anas hottentota **Hottentot Teal N:** >40 Lake Naivasha 1–2 Dec, and >20 Lake Nakuru 5–6 Dec (EM, SJ).

Netta erythrophthalma **Southern Pochard M:** >30 Lake Naivasha 8–9 Nov (EM, SJ).

Nettapus auritus **African Pygmy Goose R:** 3 Tungyanga Dam in Kiambu district during Apr (JRPC, ADL, MS) with 1 male during Jun and Jul (BP, ABG); 4 on a pond near Shimoni 11 Aug (DAT), 2 Amboseli NP 3 Dec (DAT, SR).

Thalassornis leuconotus **White-backed Duck MB:** a few resident at Lake Jipe (DAT), pair with 7 ducklings near Thika 5 Mar (MG), pair with 3 ducklings near Thika Aug (DEW, ADL), 1 near Mariakani 25 Nov (EM, SJ), >15 Limuru ponds 10 Dec (DAT, SR).

ACCIPITRIDAE BIRDS OF PREY

Gypohierax angolensis **Palm-nut Vulture E:** 1 Buffalo Springs GR 21 Jan (ADL). Pair around Samburu Lodge Jun–Aug (ADL, DEW).

Gyps rueppellii **Rüppell's Vulture** M: >40 Hells Gate NP throughout the year (many observers) with breeding in most months.

Circus ranivorus **African Marsh Harrier M:** singles Kisumu and Lake Jipe during Feb (DAT, DF); pair Amboseli NP 24 Jun (DAT, SR); pair Musiara swamp, Mara GR, Jun–Sep (DAT, ADL)—possibly resident here throughout the year.

Circaetus cinerascens **Banded Snake Eagle R:** 1 Mungatsi (near Mumias) 16 Nov (TS), 2 northwestern Mara GR 20–22 Nov (TS).

Circaetus fasciolatus **Southern Banded Snake Eagle R:** 1 over Diani Forest 25 Mar (JHF), 1 Shimba Hills NP 25 Aug (DEW).

Accipiter badius **Shikra M:** several around Baringo all year (several obs), 1–2 Kerio Valley 8 Feb (DAT, DF), pair Kisumu Feb and Aug (DAT, DF, ADL), 1 Tsavo East NP (Mtito Andei area) 22 Jun (DAT), 5 Kongelai escarpment 11 Nov (EM, SJ), 1 near Mumias 15 Nov (EM, SJ) and 1 near Mariakani 25 Nov (EM, SJ).

Accipiter minullus **Little Sparrowhawk R:** singles at Hunter's Lodge (Feb), Mara GR (Feb, Jun), Samburu Lodge (Jun), Naivasha (Jun), Maralal (Aug), Shimoni (Aug), Watamu (Sep), Nairobi (Sep), Kiambu (Dec) and Ngobit (Dec) (several observers).

Accipiter ovampensis **Ovampo Sparrowhawk R:** at least one pair still resident in NW Mara GR around the Mara River (BWF, DAT).

Accipiter rufiventris **Rufous Sparrowhawk M:** 1 Limuru 15 Feb (DF), 1 Ngong Hills Jun–Jul and 16 Sep (BWF, DJP).

Aquila verreauxi **Verreaux's Eagle R:** records from Tsavo West NP, Nairobi NP, Olorgesaile, Hells Gate NP, Lake Nakuru NP, Lake Baringo, Timau, Ololokwe, and northwestern Mara GR (several observers).

Kaupifalco monogrammicus **Lizard Buzzard E:** western Kenya records: 1 near Ng'iya 15 Jul (DAT), 1 Mumias–Port Victoria 15 Nov (EM, SJ). Pair resident northwestern Mara GR all year (DAT).

Stephanoaetus coronatus **Crowned Eagle M:** pair Saiwa Swamp NP 9–10 Nov, 1 Gedi ruins 23 Nov, and pair Meru Forest 14 Dec (EM, SJ).

Aviceda cuculoides **Cuckoo Hawk R:** records from Kakamega, Mara GR, Kiambu, Shimba Hills and Sokoke during Jul–Sep; 2 ads and 2 juvs NW Mara GR 27 Jul to 1 Aug (DAT, TS); 1 Mathews Range 12–14 Oct (DAT); 1 Mountain Lodge 18–19 Dec (BWF).

Chelictinia riocourii **Swallow-tailed Kite R:** several resident Kedong Valley all year; 2 Buffalo Springs GR 21 Jan (ADL); singles Kalacha–Maikona 20–22 Jan (DJP, MACC, ALA); several Lotokipi plains near Lokichoggio 28 Jun (MACC).

Macheiramphus alcinus **Bat Hawk R:** records from Sokoke Forest (Feb), Diani Forest (Mar–Apr), Shaba and Samburu GR (Jul–Aug), Naivasha (Nov), northwestern Mara GR (Aug–Nov) and Lake Baringo (all year).

FALCONIDAE FALCONS

Falco alopex **Fox Kestrel R:** 1 south of Lokitaung 30 Mar (TS); several on cliffs around Lokichoggio 26–29 Jun (MACC).

Falco ardosiaceus **Grey Kestrel ME:** 1 Kerio Valley 8 Feb (DAT, DF) and 1 Lake Baringo 3 Jul (DAT, SR).

Falco chicquera **Red-necked Falcon M:** 1 Samburu GR 1 Jan (MG), 2 Huri Hills 21 Jan (DJP, MACC, ALA), and 1 Buffalo Springs GR 31 Oct (BWF).

Falco cuvieri **African Hobby R:** 1 Lake Naivasha 7–8 Nov (EM, SJ).

Falco dickinsoni **Dickinson's Kestrel S(B):** 1 near Magadi 8 Aug (CJC, KP).
Sixth record for Kenya.

Falco rupicoloides **White-eyed Kestrel ME:** singles at Maikona and Ileret 20–24 Jan (DJP, MACC, ALA) and at Maikona 24 Dec (DAT), 2–3 Huri Hills 23–24 Dec (DAT); singles NNE of Marsabit 22 Jul (DTH) and 24 Dec (DAT), 1–2 Lewa Downs (Timau) 2–3 Sep (DAT), and 1 Buffalo Springs GR 31 Oct (BWF).

Falco tinnunculus rufescens **Kestrel MB:** pair and 4 fledglings Lake Magadi 13 Aug (MACC)—same site as in 1987.

PHASIANIDAE QUAILS, FRANCOLINS

Francolinus coqui **Coqui Francolin E:** several heard calling in the Huri Hills 10–12 Nov (race presumed to be *maharao*) (DJP, MACC, ALA).

Francolinus levaillantoides **Smith's Francolin S(A):** up to three pairs recorded in the Huri Hills (alt. 1550 m) Jan, Nov and Dec (DJP, MACC, ALA, DAT). See *Scopus* 15.

Ptilopachus petrosus **Stone Partridge R:** many heard calling south of South Horr 31 Jan (DJP, MACC, ALA); >6 Ngare Ndare (north of Timau) 24–27 Mar (MACC); a few Lewa Downs Aug and Sep (IC).

TURNICIDAE BUTTON QUAILS, QUAIL PLOVER

Ortyxelos meiffreni **Quail Plover R:** a few near Mbelolo gate, Tsavo East NP 18 Feb (DAT, DF); 2–3 pairs south of Kitani, Tsavo West NP during Oct (RG) were the first from Tsavo West.

Turnix sylvatica **Button Quail M:** several Tsavo West NP 23 Mar (MG), 1 ringed Ngulia 3 Dec (GCB, DJP, *et al.*).

GRUIDAE CRANES

*Balearica regulorum** **Grey Crowned Crane N:** >50 Amboseli NP 17 Jan (ADL), 50 near Gilgil 9 Dec (EM, SJ).

*Nomenclature follows *The birds of Africa*; treated as one species by Britton (1980).

RALLIDAE RAILS, CRAKES

Gallinula angulata **Lesser Moorhen M:** 1 Nairobi NP 12 Jun (ABG).

Porphyrio alleni **Allen's Gallinule R:** recorded at Lake Naivasha, Thika, and Lake Baringo Jun–Aug (ADL, DAT, SR, DEW).

Porphyrio porphyrio **Purple Gallinule M:** recorded from Thika (Feb and Aug), Lake Naivasha (Dec), and Baringo (Dec) (ADL, EM, SJ, DAT, DF).

Porzana marginalis **Striped Crake R:** male at Mountain Lodge pool 3 Jul (IR).

Rallus caerulescens **African Water Rail M:** records from Karatina (Aug), northwestern Mara GR (Sep), and Lake Naivasha (all months) (ADL, EM, SJ, DAT).

Sarothrura pulchra **White-spotted Pygmy Crake R:** several in riverine habitats in Busia district (DAT, DF, BWF).

Fulica cristata **Red-knobbed Coot N:** >12000 Lake Naivasha 1–2 Dec (EM, SJ).

HELIORNITHIDAE FINFOOTS

Podica senegalensis **African Finfoot R:** recorded from Naro Moru River Lodge during Jul, Oct, Nov, Dec (BWF, TS); 1 Nairobi NP 6 May and 16 Dec (EM, MG, SJ).

OTIDIDAE BUSTARDS

Eupodotis hartlaubii **Hartlaub's Bustard E:** pair Marsabit 23–24 Dec alongside *E. melanogaster* (DAT).

Eupodotis melanogaster **Black-bellied Bustard M:** 1 near Thika 20 Aug (ADL); >10 Mara GR (Keekorok area) 2–4 Dec (EM, SJ); 2 Naro Moru 30 Nov (EM, SJ); pair Marsabit 23–24 Dec alongside *E. hartlaubii* (DAT).

Eupodotis ruficrista **Buff-crested Bustard M:** a few Olorgesaillie area 2 Feb (DAT).

Eupodotis senegalensis **White-bellied Bustard M:** records from Mara GR, Amboseli NP, Olorgesaile, Nairobi NP, Naro Moru, Meru NP, Buffalo Springs GR,Lokichoggio, and the Huri Hills (DAT).

Neotis denhami **Denham's Bustard ME:** race ***jacksoni*****:** >10 (including displaying males) Poror (25 km NW of Maralal) 19–20 Jan (DAT, PG); 1 south of Naro Moru (Solio Ranch) 5 Feb and 18 Jul (ADL, DAT); 4 (including 2 imms) Mara GR (Aitong) late Jun (DAT). **Nominate race:** 4–6 Lotokipi Plains near Lokichoggio 28 Jun (MACC).

Neotis heuglini **Heuglin's Bustard M:** 7 males and 1 female on NW slope of Mt Marsabit 22–24 Dec (DAT).

Otis arabs **Arabian Bustard S(A):** 1 photographed 10 km north of Ileret (east side of Lake Turkana) 25 Jan (DJP, MACC, ALA).

Second Kenya record. The first was of a pair collected in January 1932.

Otis kori **Kori Bustard N:** >60 on grasslands north of North Horr 23 Jan (DJP, MACC, ALA).

ROSTRATULIDAE PAINTED SNIPES

Rostratula benghalensis **Painted Snipe R:** recorded from Lake Baringo (Mar–Dec), Lake Naivasha (Aug), and Mara GR (Jul–Dec) (several observers).

RECURVIROSTRIDAE STILTS, AVOCETS

Recurvirostra avosetta **Avocet B:** breeding confirmed Amboseli NP Jun (ADL); see *Scopus* 13: 121–122.

BURHINIDAE THICKNEES

Burhinus vermiculatus **Water Thicknee M:** records from Amboseli NP, Mzima Springs and Lake Jipe (both Tsavo West NP), Sabaki River, Samburu and Mara GRs (several observers).

GLAREOLIDAE COURSERS, PRATINCOLES

Cursorius temminckii **Temminck's Courser N:** >100 northwest Mara GR 26 Jan (ADL), >40 Lake Magadi 2 Feb (DAT)—an influx to both areas after heavy rain.

Rhinoptilus chalcopterus **Violet-tipped Courser R:** 1 Lake Jipe 22 Feb (DAT, DF).

Rhinoptilus cinctus **Heuglin's Courser M:** records from Lake Baringo, Lake Jipe, Mara GR, Kimara, and Lewa Downs (DAT).

Glareola nuchalis **White-collared Pratincole M:** 15–20 resident on Nzoia River between Mumias and Sega (DAT).

Glareola ocularis **Madagascar Pratincole N:** >300 Sabaki River mouth late Aug (TS), >200 moving south over Gedi 4 Sep (ADL), and >200 still at Sabaki mouth 21 Sep (IR).

Glareola pratincola **Common Pratincole M:** >70 Lake Baringo 7–8 Dec (EM, SJ).

LARIDAE GULLS, TERNS

Larus hemprichii **Sooty Gull N:** *c.* 3000 Sabaki River mouth 22 Nov (EM, SJ).

Anous stolidus **Common Noddy R:** 20–30 off Watamu–Malindi area Jul–Nov (several observers).

Anous tenuirostris **Lesser Noddy S(B):** 1 off Shimoni 10 Aug (DAT).

Sterna anaethetus **Bridled Tern R:** >10 off Watamu 21 Jul to 8 Aug (BWF, IR), >30 off Shimoni 10–12 Aug (DAT, DJP).

Sterna fuscata **Sooty Tern R:** *c.* 50 off Watamu 21 Jul (IR), 2–3 off Shimoni 10–12 Aug (DAT, DJP).

Sterna repressa **White-cheeked Tern R:** 2 Sabaki River mouth 21 Sep (IR).

Sterna bengalensis **Lesser Crested Tern N:** 1500 Sabaki River mouth 22 Nov (EM, SJ).

Sterna bergii **Crested Tern N:** >20 Sabaki River mouth 22 Nov (EM, SJ), >6 off Shimoni 10–12 Aug (DAT).

Sterna dougallii **Roseate Tern B:** >30 pairs breeding Kisite Island Aug (DAT).

RYNCHOPIDAE SKIMMERS

Rynchops flavirostris **African Skimmer R:** singles reported from Lake Baringo (Feb, Aug), Sabaki River mouth (Jul), and Lake Nakuru (Sep) (several observers).

PTEROCLIDAE SANDGROUSE

Pterocles lichtensteinii **Lichtenstein's Sandgrouse R, N:** >30 Ngare Ndare (north of Timau) 24–27 Mar (MACC), >60 Lake Baringo 7–8 Dec (EM, SJ).

COLUMBIDAE PIGEONS, DOVES

Aplopelia larvata **Lemon Dove E:** 2 in forest on Oloololo escarpment NW Mara GR 2 Jan (BWF). Recorded elsewhere from The Ark (Jul), Mountain Lodge (Aug), Kakamega (Aug), and the Mathews Range (Oct) (several observers).

Columba arquatrix **Olive Pigeon N:** hundreds Maralal 19–20 Jan (DAT, PG), 6 Marsabit 22 Jul (DTH).

Columba delegorguei **Bronze-naped Pigeon M:** 3 Nairobi Arboretum 1 Aug (DEW).

Turtur afer **Blue-spotted Wood Dove E:** 1 present at Lake Elmenteita 1–28 May (MACC).

PSITTACIDAE PARROTS

Agapornis pullaria **Red-headed Lovebird R:** 2–3 pairs resident throughout the year around Mungatsi (Mumias area) and Alupe (Busia district) (several observers).

Poicephalus gulielmi **Red-fronted Parrot E:** 2 northwest of Maralal 19 Jan (DAT, PG).

Poicephalus meyeri **Brown Parrot E:** 2 Lake Baringo-Kapedo 8 Dec (EM, SJ).

Psittacus erithacus **Grey Parrot M:** 2 over Kakamega Forest 14 Nov were the only records (EM, SJ). *Fast declining in Kakamega in recent years.*

MUSOPHAGIDAE TURACOS

Corythaixoides personata **Bare-faced Go-away Bird E:** 1 20 km east of Narok 4 Jun (MG).

Crinifer zonurus **Eastern Grey Plantain Eater E:** 1 below Oloololo escarpment northwest Mara GR 26 Jul to 7 Sep (DAT).

Tauraco leucolophus **White-crested Turaco ME:** resident in Kerio Valley below Tambach throughout the year (TS, DAT).

Tauraco porphyreolophus **Violet-crested Turaco R:** 2 Mua Hills 19 Feb (CFT, ABG), 2 Ol Doinyo Sabuk NP 11 Jun (MG).

CUCULIDAE CUCKOOS

Cercococcyx montanus **Barred Long-tailed Cuckoo R:** several resident in Kieni Forest throughout the year, though only vocal Jan–Mar and Sep–Dec (several observers).

Chrysococcyx cupreus **Emerald Cuckoo E:** 1 calling Sokoke Forest 13, 17 Aug (DTH).

Clamator levaillantii **Levaillant's Cuckoo** R: Records from Mara GR (Feb, Dec) and Lake Nakuru NP (Jul) (JRPC, DAT).

Cuculus clamosus **Black Cuckoo R:** 2 Kakamega Forest (race *gabonensis*) 5 Apr (RB), 1 Mathews Range 14 Oct (DAT), >12 Tsavo West NP near Mtito Andei 30 Nov (DAT).

Cuculus gularis **African Cuckoo R:** records from Kajiado (Mar), Mara GR (Jun), Lokichoggio (Jun), Lake Baringo (Jul, Aug, Dec), Lewa Downs (Sep), Elmenteita (May, Sep), Lake Naivasha (Oct, Nov), and Tsavo West NP (Nov) (several observers).

Cuculus rochii* **Madagascar Lesser Cuckoo R:** 1 Lake Baringo 16 Aug (TS).

*Follows *The birds of Africa*; treated as a race of *C. poliocephalus* by Britton (1980).

Centropus grillii **Black Coucal R:** several males holding territory in West Mara grasslands Jun and Jul (BWF).

TYTONIDAE BARN OWLS

Tyto capensis **Cape Grass Owl R:** reported on several occasions from The Ark from 2 Aug to 5 Nov (MC).

STRIGIDAE OWLS

Asio capensis **African Marsh Owl E:** 1 Musiara swamp, Mara GR 1 Sep (ADL).

Bubo capensis **Cape Eagle Owl M:** records from near Ngobit (all year) and Hell's Gate gorge (Jun, Jul, Nov).

Glaucidium tephronotum **Red-chested Owlet R:** pair (sexually dimorphic) seen mid-morning Kakamega Forest 6 Nov (BWF).

Otus leucotis **White-faced Scops Owl R:** common throughout hills south of Lokitaung during Mar (TS); 2 Lokichoggio 26 Jun (MACC); several Samburu GR (Aug–Oct) (DAT, RB).

CAPRIMULGIDAE NIGHTJARS

Caprimulgus fraenatus **Dusky Nightjar R:** several Nairobi NP Jul and Aug (DJP, BP); present Hell's Gate gorge 9 Dec (DAT).

Caprimulgus inornatus **Plain Nightjar R:** several Tsavo West NP mid Jan and mid Mar (DJP), 1 Lake Baringo 9 Aug (DEW), 2 north of Maralal 13 Nov (DJP), and 4 ringed Ngulia 10 Nov to 9 Dec (GCB, DJP).

Caprimulgus natalensis **White-tailed Nightjar R:** >30 resident in small area of inundated grassland west of Mumias (several observers).

Caprimulgus nigriscapularis* **Black-shouldered Nightjar R:** present Mungatsi (near Mumias) Jul and Dec (TS, DAT).

*Follows *The birds of Africa*; treated as a race of *C. pectoralis* by Britton (1980).

Caprimulgus nubicus **Nubian Nightjar R:** 2 Lake Jipe 21 Feb (DAT, DF).

Caprimulgus stellatus **Star-spotted Nightjar R:** common to the north and south of North Horr during Jan (DJP, MACC, ALA).

Macrodipteryx longipennis **Standard-winged Nightjar R:** male in full breeding plumage Mungatsi (near Mumias) 23 Dec (BWF).

APODIDAE SWIFTS

Schoutedenapus myoptilus **Scarce Swift R:** 15–20 near Kiambu 29 Mar and frequently in Apr, reducing to 3 on 9 Jul and 20 Dec (JRPC); >50 Mathews Range 12–14 Oct (DAT).

COLIIDAE MOUSEBIRDS

Colius leucocephalus **White-headed Mousebird R:** a few near Makutano (on pipeline road to Loitokitok) 25 Jun (DAT), and 1 near Namanga 3 Dec (DAT).

TROGONIDAE TROGONS

Apaloderma narina **Narina's Trogon E:** 2–3 Mathews Range 12–14 Oct (DAT).

ALCEDINIDAE KINGFISHERS

Ceryle maxima **Giant Kingfisher E:** 2 on river north of Kapedo, Mar (TS).

Halcyon albiventris **Brown-hooded Kingfisher E:** 1 Gigiri, Nairobi 27 Aug (MG), 1 Blue Posts Hotel, Thika 29 Oct (BWF).

MEROPIDAE BEE-EATERS

Merops nubicus **Carmine Bee-eater E:** a few present Lake Baringo Jan, Feb and mid Oct to end of the year (TS, DAT); 2 near Nanyuki 12 Feb (DKR).

Merops revoilii **Somali Bee-eater M:** several near Mbelolo gate (close to railway line) in Tsavo East NP mid Feb (DAT, DF), 1 near Tsavo East Safari Camp 22 Jun (DAT, DF).

Merops superciliosus **Madagascar Bee-eater M:** 3 Tsavo East NP 16 Feb (DAT, DF), probably residents.

CORACIIDAE ROLLERS

Coracias abyssinica **Abyssinian Roller R:** 1 at 50 km north of Marech Pass 2 Apr (RB), 1 near Lake Baringo 20 Dec (BWF).

Eurystomus glaucurus **Broad-billed Roller M:** 4 Lake Nakuru NP 2 July (DAT), possibly migrants from Madagascar.

PHOENICULIDAE WOOD HOOPOES

Phoeniculus granti **Violet Wood Hoopoe R:** party of 5 Meru NP 22 Jul (RB).

BUCEROTIDAE HORNBILLS

Bycanistes brevis **Silvery-cheeked Hornbill N:** *c.* 150 near Ngobit 22 Jul (ADL).

Bycanistes bucinator **Trumpeter Hornbill E:** 8 Fourteen Falls near Thika 11 Jun (MG), 7 with *B. brevis* at Blue Posts Hotel, Thika 29 Oct (BWF).

Tockus hemprichii **Hemprich's Hornbill R:** 2 near Lokichoggio 28 Jun (MACC).

CAPITONIDAE BARBETS

Buccanodon leucotis **White-eared Barbet M:** seen sporadically in Diani Forest, south coast, 13 Mar to 14 Apr (JHF).

Gymnobucco bonapartei **Grey-throated Barbet E:** small numbers in forest patches on Oloololo escarpment, northwest Mara GR (BWF).

Pogoniulus simplex **Green Tinkerbird M:** 1 Sokoke Forest 24 Nov (EM, SJ).

INDICATORIDAE HONEYGUIDES

Indicator meliphilus **Pallid Honeyguide R:** 1 Hell's Gate NP 4 Jul (DTH).

Indicator variegatus **Scaly-throated Honeyguide M:** 1 northwest Mara GR (Mara River area) 12 Dec (DAT).

Prodotiscus regulus **Wahlberg's Honeybird M:** 1 near Kilaguni, Tsavo West NP 10 Jun (ADL).

Prodotiscus zambesiae **Eastern Honeybird M:** 1 Outspan Hotel, Nyeri 30 Nov (EM, SJ) plus several records from Nairobi suburbs.

PICIDAE WRYNECKS, WOODPECKERS

Jynx ruficollis **Red-throated Wryneck R:** several resident Ibonia estate, Kiambu all year (JRPC).

Campethera abingoni **Golden-tailed Woodpecker M:** 1 northwest Mara GR (Mara River area) 11 Dec (DAT)—resident in the area.

Denropicos poecilolaemus **Uganda Spotted Woodpecker** R: 1 Mungatsi, Busia District 19 Sep (DAT, DJP, BWF).

Picoides obsoletus **Brown-backed Woodpecker R:** records from Mara GR (Feb), Nairobi NP (Feb, Mar), near Embu (Jul), Ibonia Estate, Kiambu (all months). Breeding recorded Nairobi Oct and Nov.

ALAUDIDAE LARKS

Calandrella personata **Masked Lark M:** birds in the Huri Hills in Jan were presumed to belong to the race *yavelloensis* (DJP, ALA, MACC).

Calandrella somalica **Rufous Short-toed Lark E:** large parties common in the Huri Hills 10–12 Nov were presumed to belong to the northern race *megaensis* (DJP, MACC).

Galerida fremantlii **Short-tailed Lark E:** 3 at 80 km NNE of Marsabit 23 Jul (DTH) were the first records of the race *megaensis* from northern Kenya for many years.

Mirafra hypermetra **Red-winged Bush Lark E:** 1 singing 20 km north of Malindi 24 Aug was the first record from coastal Kenya (DEW).

Mirafra rufocinnamomea **Flappet Lark E:** a few in the Huri Hills 23–24 Dec (DAT).

HIRUNDINIDAE SWALLOWS

Hirundo angolensis **Angola Swallow MB:** reported breeding near Naro Moru Jan and Jul (ADL, MG); several seen near Nanyuki Nov and Dec (BWF).

Hirundo atrocaerulea **Blue Swallow R:** >75 roosting at the west Kenya site 14 Jul (see *Scopus* 13: 125–126) (DJP, DAT).

Hirundo griseopyga **Grey-rumped Swallow N:** many hundreds in the Kedong Valley in late Jul were presumed to be migrants from the southern tropics (BWF).

Hirundo semirufa **Rufous-chested Swallow MB:** present in western areas of Mara GR throughout the year, presumably a response to consistent wet conditions. Several pairs recorded breeding (BWF).

Phedina borbonica **Mascarene Martin S(B):** 2 over saltworks 20 km north of Malindi 24 Aug (DEW *et al.*). Full details received.

Third Kenya and mainland East African record.

ORIOLIDAE ORIOLES

Oriolus chlorocephalus **Green-headed Oriole M:** recorded in Sokoke Forest Feb and Aug (DTH, DF, TS, DAT).

CORVIDAE CROWS

Corvus albicollis **White-necked Raven M:** a few near Maralal 19–20 Jan (DAT), 1–2 near Keekorok, Mara GR 3–4 Jun (MG), a few in the Mathews Range (Kitich area) 12–14 Oct (DAT).

Ptilostomus afer **Piapiac M:** 5 near Busia 12 Dec (TS).

PARIDAE TITS

Parus leucomelas **Black Tit M:** 1 Mungatsi (near Mumias) 23 Dec (BWF).

First Kenya record for many years.

TIMALIIDAE BABBLERS

Turdoides aylmeri **Scaly Chatterer E:** fairly common 4 km NE of Mtito Andei (DJP); party of 7 near Olorgesailie 1 Dec (TS).

Turdoides hindei **Hinde's Pied Babbler RB:** party of 9 birds near Maua (Meru district) 23 Jul (RB). Nest with 2–3 young near Tana Bridge (Nairobi–Nyeri road) 1 Aug and a party of 7–8 with 2 newly fledged young seen nearby on 5 Aug (MR, DAT).

Turdoides hypoleucus **Northern Pied Babbler E:** several at the Aberdare Country Club 2 Aug and 6–9 Nov (DAT). Probably the northern limit for this species.

Turdoides melanops **Black-lored Babbler M:** 6 at Lewa Downs 2–3 Sep were near the type locality of Meinertzhagen's race *vepres*, included in *T. m. sharpei* by Britton (1980) following White 1962 (*A revised check list of African shrikes, orioles, ... Lusaka: Government Printer*).

Turdoides plebejus **Brown Babbler R:** several flocks in the Maralal–Suguta Marmar area 7–8 Aug (DFW).

CAMPEPHAGIDAE CUCKOO SHRIKES

Campephaga phoenicea **Red-shouldered Cuckoo Shrike M:** recorded at Mungatsi (near Mumias) 10 Feb and 23 Dec; a newly fledged cuckoo shrike seen there on 18 Aug may also have been this species (several observers).

PYCNONOTIDAE BULBULS

Andropadus importunus **Zanzibar Sombre Greenbul M:** a few resident around Fourteen Falls, near Thika (MG).

Andropadus virens **Little Greenbul E:** a few pairs resident and breeding at Lolgorien (BWF).

Bleda syndactyla **Bristlebill E:** 2 Saiwa Swamp NP 10 Nov (EM, SJ).

Chlorocichla laetissima **Joyful Greenbul E:** a few resident in forest patches on the Oloololo escarpment northwest Mara GR and at Lolgorien (BWF).

Phyllastrephus baumanni **Toro Olive Greenbul R:** 1 Kakamega Forest 14 Aug (DEW).

TURDIDAE THRUSHES

Alethe poliocephala **Brown-chested Alethe M:** 1 singing male Kieni Forest 24 Dec (ABG).

Cercotrichas hartlaubi **Brown-backed Scrub Robin R:** 1 UNEP HQ, Gigiri, Nairobi 1 Apr (ABG), singles Ibonia Estate, Kiambu Jun and Nov (JRPC), a pair Naro Moru 7 and 30 Nov (EM, SJ, TS).

Cercotrichas quadrivirgata **Eastern Bearded Scrub Robin E:** 1 singing Kibwezi Forest, Mar (DJP).

First record from Kibwezi and furthest inland Kenya record.

Cichladusa arquata **Morning Thrush M:** 1 near Kaloleni (Kilifi district) 11 Dec (BWF).

Cossypha natalensis **Red-capped Robin Chat M:** juvenile at Buffalo Springs Lodge, 7 Sep (IR).

Monticola rufocinerea **Little Rock Thrush R:** recorded from Lake Nakuru NP (all year), south end of the Ngong Hills (all year), Magadi road (May, Jul), below Tambach in the Kerio Valley (all year), Kakamega quarry (breeding Nov), Ngare Ndare (Mar), and the Meru–Isiolo junction near Timau (Dec) (several observers).

Oenanthe bottae **Red-breasted Wheatear R:** 1 at base of the Mongilla Hills northeast of Lokichoggio 27 Jun (MACC).

Turdus fischeri **Spotted Ground Thrush R:** several seen at Gedi during Aug; last date for this site: 8 Oct (TS, DAT).

Turdus pelios **African Thrush MB:** resident and breeding in grounds of Lake Nakuru Lodge (several observers).

Turdus tephronotus **Bare-eyed Thrush E:** 1 near Olorgesaillie 2 Feb (DAT), 1 ringed at Ngulia on 28 Nov was the first record for the area (GCB, DJP), 1 at base of the Mua Hills (Machakos district) 6 Dec (BWF).

SYLVIIDAE WARBLERS

Bradypterus barratti **Evergreen Forest Warbler M:** 2 Kieni Forest 30 Jul (MG).

Camaroptera simplex **Grey Wren Warbler M:** race *undosa* present throughout the year in northwest Mara GR with possible increase in numbers during Dec (wet season) (several observers).

Chloropeta gracilirostris **Papyrus Yellow Warbler R:** 1 Kisumu Yacht Club, 23 Dec (BWF).

Cisticola aberrans **Rock-loving Cisticola R:** at least 2 pairs throughout the year on the Oloololo escarpment, northwestern Mara GR (BWF, TS, DAT).

Cisticola aridula **Desert Cisticola E:** common in the Huri Hills Nov–Dec (DJP, MACC, DAT).

Cisticola bodessa **Boran Cisticola E:** several pairs on the western slopes of the Kerio Valley below Iten and Tambach (BWF, DAT).

Cisticola brunnescens **Pectoral-patch Cisticola E:** a few in the Huri Hills Nov–Dec were probably nominate birds extending south from southern Ethiopia (DJP, MACC, DAT). *First records from northern border areas.*

Cisticola cinereola **Ashy Cisticola E:** common in the Huri Hills Nov (DJP, MACC).

Cisticola fulvicapilla **Tabora Cisticola M:** common throughout much of Mara GR and around Lolgorien (BWF).

Cisticola natalensis **Croaking Cisticola E:** several in the Huri Hills Nov–Dec, presumably the race *argentea* (DJP, MACC, DAT).

Cisticola tinniens **Tinkling Cisticola M:** 2–3 pairs in highland swamp near Eldoret 8 Feb (DF, DAT).

Cisticola woosnami **Trilling Cisticola M:** common in northwest Mara GR from Oloololo escarpment to Mara Serena Lodge (BWF).

Eremomela scotops **Green-capped Eremomela E:** 2 near Siakago (Embu district) 2 Jul, presumably of the race *kikuyuensis* (RB); present Sokoke Forest during Feb (DAT).

Heliolais erythroptera **Red-winged Warbler R:** a pair Awasi (near Muhoroni) Nov and Dec (EM, SJ, DAT).

Third Kenya record and the first since 1969.

Hyliota flavigaster **Yellow-bellied Hyliota R:** 1 Mungatsi (near Mumias) 23 Dec, several pairs resident along the Oloolo escarpment northwest Mara GR (BWF).

Parisoma lugens **Brown Parisoma M:** several records from the Nairobi area: Kiambu (Apr), Ngong (Jun), and Nairobi NP (Dec) (several observers).

Sylvietta isabellina **Somali Long-billed Crombec M:** 1 near Wamba 9 Sep (IR), 1 Buffalo Springs GR 28 Nov (EM, SJ).

Sylvietta virens **Green Crombec R:** several resident in Mumias and Busia districts throughout the year (several observers).

MUSCICAPIDAE FLYCATCHERS

Muscicapa lendu **Chapin's Flycatcher S(B):** 4 Kakamega Forest 15 Nov (EM, SJ).

Myioparus plumbeus **Lead-coloured Flycatcher E:** recorded from Kongelai escarpment 25 Mar and in Nov and Dec (TS).

Batis minor **Black-headed Batis M:** 1 at Mungatsi (near Mumias) 14 Jul, presumably of the race *erlangeri* was the first record for the area (DJP, DAT).

Batis orientalis **Grey-headed Batis R:** 1 near Wamba 9 Sep (IR).

Bias musicus **Black and White Flycatcher R:** a pair in Meru Forest 30 Oct to early Dec (BWF, TS, DAT).

Platysteira peltata **Black-throated Wattle-eye E:** pair in *Acacia* woodland in Lake Nakuru NP 3 Aug (DJP, CJC).

MOTACILLIDAE WAGTAILS, PIPITS

Anthus melindae **Malindi Pipit M:** 2 near Sabaki River mouth 22 Nov (EM, SJ).

Anthus sokokensis **Sokoke Pipit R:** 2 in *Brachystegia* woodland, Sokoke Forest, 7 Aug (TS) was the only record received for the year.

Macronyx ameliae **Rosy-breasted Longclaw MB:** 1 near Poror, northwest of Maralal 20 Jan (DAT). Several breeding near Naro Moru early Feb (DAT).

Macronyx sharpei **Sharpe's Longclaw M:** a pair near Naro Moru 4 Feb (DF, DAT), a pair near Timau 18 Dec (BWF).

MALACONOTIDAE BUSH SHRIKES

Dryoscopus pringlii **Pringle's Puffback M:** 3 at Tsavo gate, Tsavo West NP 27 Jul (BP), a few present near Mtito Andei during Jun, becoming more numerous after rains in Nov–Dec (DJP).

Laniarius mufumbiri **Papyrus Gonolek R:** several in papyrus swamps at Kisumu throughout the year (several observers).

Malaconotus multicolor nigrifrons **Black-fronted Bush Shrike MB:** a pair with a juvenile Kieni Forest, southern Aberdares 2 Dec MG).

Tchagra jamesi **Three-streaked Tchagra M:** very common around Lokichoggio 25–29 Jun (MACC).

LANIIDAE SHRIKES

Corvinella corvina **Yellow-billed Shrike M:** several around the Suam River below Kongelai escarpment throughout the year (TS).

Corvinella melanoleuca **Magpie Shrike M:** 3 near Cottars Camp, Mara GR 18 Sep (IR) and 7 there on 12 Nov (BWF).

PRIONOPIDAE HELMET SHRIKES

Prionops poliolopha **Grey-crested Helmet Shrike RB:** Mara GR records from Oloololo escarpment area (Feb, Jun) and Cottars Camp area (Aug) (BWF). Nest with 3 young Lake Nakuru NP 2 Jul with 9 birds in attendance was the first breeding record for the country for many years (DF, DAT).

STURNIDAE STARLINGS

Cinnyricinclus femoralis **Abbott's Starling RB:** several records (max 4 birds) from Kieni Forest during the year (BWF); 8–10 near Uplands 3 Aug (DJP, CJC). Adult and juvenile at Naro Moru gate, Mt Kenya NP 5 Aug (DEW).

Cinnyricinclus sharpii **Sharpe's Starling R:** 4 Marsabit National Reserve 22 Jul (DTH), 1 below Oloololo escarpment northwest Mara GR in Sep (BWF), flock of 15 Mt Elgon NP 11 Nov (EM, SJ).

Lamprotornis chalcurus **Bronze-tailed Starling R:** several around Lokichoggio 25–29 Jun (MACC).

Lamprotornis chloropterus **Lesser Blue-eared Glossy Starling N:** >100 Kongelai escarpment 11–12 Nov (EM, SJ).

Lamprotornis purpureus **Purple Glossy Starling R:** several records from Mungatsi and Ng'iya during the year (BWF, DAT).

Onychognathus morio **Red-winged Starling E:** pair Voi Safari Lodge 9 Feb (ADL), pair Lewa Downs 2–3 Sep (DAT).

Onychognathus salvadorii **Bristle-crowned Starling N:** >75 feeding on fruiting *Salvadora* bushes Samburu GR 6–7 Aug (DEW), several on slopes of Mt Marsabit in Dec (DAT).

Onychognathus walleri **Waller's Chestnut-winged Starling E:** several around Kitich in the Mathews Range 12–14 Oct (DAT).

Poeoptera kenricki **Kenrick's Starling M:** flock of 20–25 Meru Forest Nov–Dec (TS).

Speculipastor bicolor **Magpie Starling R:** a few north of the Marich Pass 31 Mar (RB), a few near Oropoi on Kenya/Uganda border south of Lokichoggio 26 Jun (MACC), >30 Voi–Mariakani 21 Nov (EM, SJ).

Spreo albicapillus **White-crowned Starling N:** flock of 35–40 *c.* 50 km north of North Horr 23 Jan (DJP, ALA, MACC).

NECTARIINIDAE SUNBIRDS

Anthreptes longuemarei **Violet-backed Sunbird R:** pair still resident near Kapenguria throughout the year (several observers).

Anthreptes neglectus **Uluguru Violet-backed Sunbird R:** recorded in Shimba Hills NP during Aug (DTH, DJP, DAT).

Anthreptes rectirostris **Green Sunbird B:** pair and nest Kakamega Forest 13 Aug (DEW).

Anthreptes reichenowi **Plain-backed Sunbird M:** seen sporadically in Diani Forest 18 Mar to 14 Apr (JHF).

Nectarinia bouvieri **Orange-tufted Sunbird N:** >8 males in grassy glade, Kakamega Forest 14 Dec (ABG).

Nectarinia habessinica **Shining Sunbird R:** male Lewa Downs 2 Sep (DAT).

Nectarinia pembae **Violet-breasted Sunbird M:** 2 Jilore swamp near Malindi 24 Nov (EM, SJ).

Nectarinia preussi **Northern Double-collared Sunbird E:** present around Kitich, Mathews Range 12–14 Oct (DAT).

Nectarinia venusta **Variable Sunbird M:** >6 males of the white-bellied form *albiventris* north of Archer's Post 7 Aug (DEW).

PLOCEIDAE WEAVERS

Anomalospiza imberbis **Parasitic Weaver R:** 1 Muthaiga Golf Course 12 May (ADL).

Euplectes hartlaubi **Marsh Widowbird M:** several all year at Mungatsi (near Mumias) and near Kiminini (south of Kitale) (several observers).

Ploceus castanops **Northern Brown-throated Weaver N:** >20 around Usengi, Lake Victoria 16 Nov (EM, SJ).

Ploceus insignis **Brown-capped Weaver E:** present around Kitich, Mathews Range 12–14 Oct (DAT).

Ploceus luteolus **Little Weaver E:** a male of the race *kavirondensis* near Cottars Camp, Mara GR 16 Feb (DF, DAT). There are very few records of this race from western Kenya.

Ploceus pelzelni **Slender–billed Weaver N:** >100 around Usengi, Lake Victoria 16 Nov (EM, SJ).

Ploceus superciliosus **Compact Weaver R:** several throughout the year at Mungatsi (near Mumias) (several observers).

Plocepasser superciliosus **Chestnut-crowned Sparrow Weaver M:** present throughout the year at Kongelai escarpment, and up to 5–6 resident on eastern slopes of Kerio Valley below Kabarnet (several observers).

Passer castanopterus **Somali Sparrow R:** >10 Loiengalani 30 Jan (DJP, ALA, MACC), 5 Eliye Springs, Lake Turkana 27 Mar (TS), present throughout the year at Kapedo (TS).

ESTRILDIDAE WAXBILLS

Amandava subflava **Zebra Waxbill E:** a few near Kiminini (south of Kitale) in Jul (DJP, DAT).

Estrilda paludicola **Fawn-breasted Waxbill M:** 3 below the Oloololo escarpment, northwest Mara GR, 21 Aug (TS).

Estrilda troglodytes **Black-rumped Waxbill N:** >30 Ahero Rice Scheme Feb and Aug (DF, ADL, DAT).

Lagonosticta rara **Black-bellied Firefinch M:** several records from Mungatsi (near Mumias) throughout the year (several observers).

Ortygospiza atricollis **Quail Finch E:** several around Poror, northwest of Maralal 19–20 Jan (DAT).

Pytilia afra **Orange-winged Pytilia R:** pair on the Kongelai escarpment 13 Nov (TS) was the first Kenya record for many years.

Spermophaga ruficapilla **Red-headed Bluebill E:** male at the edge of Meru Forest 9 Nov (DAT) was the first central Kenya record for many years.

Lonchura bicolor nigriceps **Rufous-backed Mannikin E:** a few around Kitich, Mathews Range 12–14 Oct (DAT).

Lonchura fringilloides **Magpie Mannikin R:** flock of 13 feeding alongside both *L. bicolor* and *L. cucullata* in overgrown plots on the edge of Kitovu Forest near Taveta 12 Dec (BWF). Photograph supplied. *First Kenya record for over 50 years.*

Lonchura malabarica **Silver-bill E:** 1 Amboseli NP 18 Jan (ADL).

FRINGILLIDAE FINCHES, BUNTINGS

Emberiza striolata **House Bunting M:** 2 at base of Huri Hills 20 Jan and 2–3 above Loiengalani 30 Jan (DJP, ALA, MACC).

Linurgus olivaceus **Oriole Finch M:** 1 Mountain Lodge 3–4 Feb (DF, DAT), 2 Mt Elgon NP 11 Nov (EM, SJ), 1 Kakamega Forest 14–15 Nov (EM, SJ).

Serinus donaldsoni **Grosbeak Canary M:** recorded between Dukana and El Yibo on the Kenya–Ethiopian border 23 Jan (DJP, ALA, MACC).

Serinus koliensis **Papyrus Canary R:** a few throughout the year in Kisumu papyrus swamps (several observers), 6 present in papyrus around Usengi, Lake Victoria 16 Nov (EM, SJ).

Kenya: Palaearctic species

Ixobrychus minutus minutus **Little Bittern R:** 1 near Thika 12 Mar (ABG).

Ciconia ciconia **White Stork N:** >1400 Kakamega 14 Nov (EM, SJ).

Ciconia nigra **Black Stork R:** 3 Nairobi NP 2 Jan (RB), 1 Wilson Airport, Nairobi 6 Feb (GCB), 1 Lewa Downs 10 Feb (DKR), singles Fourteen Falls and Nairobi NP 12 and 19 Mar (MG); 2 Buffalo Springs GR 28 Nov (EM, SJ), 1 Kapedo 8 Dec (EM, SJ), 2 Nairobi NP 13–18 Dec (MG, SR, DAT), 1 Lake Nakuru NP 13–14 Dec (TS), 1 Marsabit Lodge 22–26 Dec (DAT).

Platalea leucorodia **Eurasian Spoonbill R:** 1 Lake Naivasha 27 Jun (DKR), 1, presumed same bird, associating with African Spoonbills *P. alba* on Crescent Island, Lake Naivasha 25 Dec (BWF).

Anas crecca **Teal R:** 9 Allia Bay 29 Jan (DJP).

Anas penelope **Wigeon R:** 1 at Ileret 25 Jan and 21 Allia Bay 29 Jan (DJP).

Accipiter brevipes **Levant Sparrowhawk S(A):** single immature bird Ngulia 20 Nov (BWF). Probably the same female seen on many occasions at Ngulia 24 Nov to 9 Dec with male as well on 9 Dec (MACC, BWF, DJP, SR, DAT, ÅL, *et al.*)

Full details received. Accepted by RBC. Third and fourth Kenya records.

Aquila heliaca **Imperial Eagle S(B):** juvenile Ngulia 24 Nov to 1 Dec (MACC, BWF, DJP, ÅL, *et al.*), 2 in the Ngulia area 2 and 3 Dec (BWF).

Aquila nipalensis **Steppe Eagle N:** 23 Lake Naivasha 7–8 Nov (EM).

Aquila pomarina **Lesser Spotted Eagle R:** few records received: several south end of Lake Nakuru 4 Feb (ABG). Passage at end of the year from 5 Nov onwards including >10 in the Huri Hills 9 Nov (DJP).

Buteo rufinus **Long-legged Buzzard S(B):** 1 over wheat fields west of Narok 28 Dec (BWF). *First record since Nov 1978.*

Hieraaetus pennatus **Booted Eagle R:** singles reported from Nairobi NP (Jan), Ngulia (Mar, Dec), Voi (Mar), Kongelai (Nov), and Kapedo and Lokori (both Dec) (several observers).

Pernis apivorus **Honey Buzzard R:** 1 Mtito Andei 2 Apr; a few Watamu–Malindi area 4–22 Sep, singles Mathews Range 14 Oct, Maralal 13 Nov, and Ngulia 29 Nov (several observers).

Falco amurensis **Eastern Red-footed Falcon R:** southward passage 24 Nov to 3 Dec included >200 Tsavo East NP 25 Nov and many over Ngulia 26 Nov. Other localities were Naro Moru, Nyeri, Kiambu, Nairobi NP, Amboseli NP, Kajiado, Kamboyo, and Taita Hills (many observers).

Falco concolor **Sooty Falcon R:** singles at The Ark 2 Nov, Mara GR 11 Nov, Lake Jipe 16 Nov and 11 Dec, Mountain Lodge 2 Dec, and Mara GR 26 Dec; 2 Huri Hills 10 Nov (MACC, BWF, DJP, TS).

Falco eleonorae **Eleonora's Falcon R:** 1 grounded by heavy rain with several Hobbies *F. subbuteo* at Lake Magadi 2 Apr (ABG); singles Nairobi 31 Oct, Kakamega 6 Nov, Naivasha 7 Nov, Mountain Lodge 26 Nov, and Meru NP 13 Dec; 2 feeding with several Hobbies near Timau 2 Nov (BWF, EM, DJP, SJ).

Falco pelegrinoides **Barbary Falcon S(A):** 1 Samburu GR 7 Sep (IR), 1 immature Ngulia 3 Dec, and a pair near Voi 11 Dec (BWF).

Falco peregrinus **Peregrine Falcon R:** 1 Lake Naivasha 7 Nov was thought to be of the race *calidus* (EM, SJ).

Coturnix c. coturnix **Common Quail R:** >30 Poror (northwest of Maralal) 19–20 Jan assumed to be of this race on account of their pale appearance, numbers and location (DAT, PG); *c.* 10 in the Huri Hills at 1200 m on 11 Nov also presumed to have been Palaearctic (MACC, DJP). *First records of presumed Palaearctic birds for some years.* Probably much overlooked in the north.

Haematopus ostralegus **Oystercatcher R:** 3 Mida Creek 19 Feb (DAT, DF), 1 Mida Creek 7 Aug (BWF), 1 Sabaki River mouth 20 Dec (TS), 1 Central Island, Lake Turkana 29 Dec (MACC).

Charadrius alexandrinus **Kentish Plover RE:** a few recorded around Ileret and Koobi Fora 25–28 Jan (DJP, MACC, ALA). *First records from the eastern shore of Lake Turkana.*

Charadrius asiaticus **Caspian Plover N:** on northeastern shore of Lake Turkana 292 counted Ileret–Allia Bay late Jan (DJP, MACC, ALA); 2 early birds Amboseli NP 31 Jul (DTH), >50 Nairobi NP 20 Oct (DKR).

Charadrius dubius **Little Ringed Plover E:** away from usual sites: 14 Kalacha (northwest of Marsabit) 21 Jan, and 69 counted Ileret–Allia Bay (northeastern Lake Turkana) late Jan (DJP, MACC, ALA).

Charadrius leschenaultii **Great Sandplover E inland:** 1 Allia Bay, northeastern Lake Turkana 29 Jan (DJP).

Charadrius mongolus **Mongolian Sandplover E inland:** 1 Koobi Fora, northeastern Lake Turkana 28 Jan (DJP); singles Lake Nakuru NP 2 Jul and 8 Dec (DAT).

Numenius arquata **Curlew E inland:** 3 Lake Elmenteita 8 Jan (MACC), 2 Lake Nakuru NP 9 Nov (BWF).

Numenius phaeopus **Whimbrel E inland:** 3 Galana River 25 Nov (EM, SJ), 4 north of Ferguson's Gulf, Lake Turkana 29 Dec (MACC).

Tringa erythropus **Spotted Redshank E:** away from usual sites: 1 Kalacha Goda (northwest of Marsabit) 22 Jan and 3 Ileret–Allia Bay (northeastern Lake Turkana) late Jan (DJP, MACC, ALA). **D:** 1 Lake Magadi 14 May in full breeding plumage (RB).

Tringa totanus **Redshank R:** 2–3 around Ileret (northeastern Lake Turkana) 25–26 Jan (DJP, MACC, ALA); 2–3 oversummering Mida Creek 24 Jul to 25 Aug (ABG, TS); 1 Lake Nakuru NP 5 Dec (EM, SJ).

Xenus cinereus **Terek Sandpiper E inland:** 1 Dandora 16 Sep (DJP), 1 Lake Elmenteita 3 Oct (MACC).

Gallinago media **Great Snipe R:** 1 near Mungatsi (near Mumias) 16 Nov (TS).

Calidris alba **Sanderling E inland:** 2 Koobi Fora (northeastern Lake Turkana) 28 Jan, 1 Lake Elmenteita 3 Sep, 1 north of Ferguson's Gulf (Lake Turkana) 29 Dec (MACC, DJP).

Calidris ruficollis **Red-necked Stint S(A):** adult Mida Creek in full breeding plumage 6 Aug (TS). Full details received; accepted by the RBC.

Third Kenya and East African record.

Calidris subminuta **Long-toed Stint S(B):** 1 Lake Baringo 10 Feb (TS).

Calidris temminckii **Temminck's Stint E:** away from usual Rift Valley sites: 2 Kalacha Soda (northwest of Marsabit) 22 Jan, 6 Ileret–Allia Bay (northeastern Lake Turkana) late Jan (DJP, MACC, ALA), 1 Nairobi NP 19 Mar (ABG); 1 Dandora 16 Sep (DJP).

Limicola falcinellus **Broad-billed Sandpiper R:** 1 Lake Magadi 2 Feb (DF, DAT); 4 back at the Sabaki River mouth on 26 Aug (TS), with 10 there on 4 Sep (ADL) and numbers increasing to >50 on 23 Nov and >65 on 20 Dec (TS).

Limosa lapponica **Bar-tailed Godwit E inland:** 2 Lake Naivasha 31 Jan, 1 Lake Baringo 25 Feb, 10 Lake Nakuru NP 29 Nov (JRPC, DKR). The only coastal record received was of 1 at Malindi on 22 Nov (EM, SJ).

Limosa limosa **Black-tailed Godwit N:** 251 Ileret–Allia Bay (northeastern Lake Turkana) with 85 in Allia Bay itself, late Jan, cf. >4000 at Allia Bay in early 1987 (DJP); small flocks regularly on central Rift Valley lakes (e.g., >150 Lake Naivasha 28 Jan (DKR)). **E:** 1 Usengi, Lake Victoria 16 Nov (EM, SJ).

Burhinus oedicnemus **Stone Curlew S(B):** 1 Lake Nakuru grasslands 6 Feb (DF, DAT); 1 Huri Hills 11 Nov (DJP, MACC).

Stercorarius **sp. skua:** a first-year bird, probably *S. parasiticus* Arctic Skua at Lake Nakuru NP 21 and 28 Aug (DJP, CJC, RW).

Larus argentatus **Herring Gull N:** 60 Sabaki River mouth 4 Sep (ADL).

Larus genei **Slender-billed Gull S(B):** 1 Ileret (northeastern Lake Turkana) 25 Jan (DJP, MACC, ALA), 1 Lake Nakuru NP 10 Sep (IR, RA, *et al.*), 2 Lake Nakuru NP 29 Nov (DKR).

Larus ichthyaetus **Great Black-headed Gull S(B):** a second-winter bird at Ferguson's Gulf, Lake Turkana 29 Mar (TS).

Gelochelidon nilotica **Gull-billed Tern E:** 1 Buffalo Springs GR 31 Jul (ADL).

Sterna sandvicensis **Sandwich Tern S(B):** 2 Sabaki River mouth 4 Sep (ADL).

Streptopelia turtur **Turtle Dove S(A):** immature at Lake Baringo 4 Nov (BWF). *Fourth Kenya record.*

Cuculus poliocephalus **Asian Lesser Cuckoo R:** influx in Diani Forest, south coast, 23 Mar to 14 Apr (JHF). **D:** juvenile caught and ringed Ngulia 7 Dec was the second record for the site (GCB, DJP, *et al.*)

Upupa epops **Hoopoe R:** Palaearctic birds recorded at Lake Baringo, Lake Elmenteita, Kiambu, and Sabarei (Kenya–Ethiopian border).

Jynx torquilla **Eurasian Wryneck S(B):** 1 Huri Hills 21 Jan (DJP, MACC, ALA); singles in western Kenya at Saiwa Swamp NP 9 Dec, Alupe 12 Dec, and Mungatsi 13 Dec (TS) indicate a small influx.

Delichon urbica **House Martin E:** 10 Voi Safari Lodge (alt. 600 m) 9 Feb (ADL). **N:** hundreds Rusinga Island, Lake Victoria 24 Feb (DKR).

Irania gutturalis **Irania E:** 1 Kajiado 13 Mar (DJP). **N:** many, with >15 males in song north of Mtito Andei 20 Mar, with a few still present 1–2 Apr (DJP); 43 ringed at Ngulia between 26 Nov and 9 Dec (GCB, DJP). **D:** adult male Buffalo Springs GR 1 Nov was the earliest Kenya record (BWF).

Luscinia luscinia **Sprosser E:** up to 3 at The Ark 2–3 Nov (BWF), >6 Maralal 9 Nov and >20 South Horr 13 Nov (DJP, MACC), 3 Mountain Lodge 3 Dec (TS). **N:** 2422 ringed at Ngulia in Nov and Dec was the highest total since 1978–79 (GCB, DJP).

Luscinia megarhynchos **Nightingale E:** wintering at two sites near South Horr 31 Jan (DJP).

Phoenicurus phoenicurus **Redstart R:** 1 Lake Nakuru NP 8 Dec (SR, DAT).

Saxicola rubetra **Whinchat E east of the Rift:** singles Nairobi 9 Apr and 25 Nov (ABG), Huri Hills 12 Nov (DJP, MACC), Naro Moru 30 Nov (EM, SJ). Early birds at Lake Baringo 8 Sep and in the Mara GR 18 Sep (IR).

Acrocephalus arundinaceus **Great Reed Warbler D:** singles ringed Ngulia 1 and 2 Dec (GCB, DJP) and seen Lake Naivasha 9 Dec (SR, DAT). This species is scarce on southward passage.

Acrocephalus griseldis **Basra Reed Warbler R:** an early bird at The Ark 2–3 Nov (BWF), 1 Aruba, Tsavo East NP 25 Nov (EM, SJ). Recorded at Ngulia 26 Nov to 7 Dec with 24 ringed (GCB, DJP) and 5 ringed Mtito Andei 10–20 Dec (ÅL, DH, AH, DJP); 1 Shimoni 10 and 16 Dec (MH).

Acrocephalus palustris **Marsh Warbler M:** wintering: a number in song at Mtito Andei 20 Mar and 2 Apr (DJP). **E:** >4 South Horr 13 Nov (DJP).

Hippolais icterina **Icterine Warbler R:** 1 ringed Ngulia 26 Nov (GCB, DJP) was the fifth record for the site.

Hippolais languida **Upcher's Warbler E:** 2–3 Huri Hills 21 Jan, 1 at 40 km north of North Horr 22 Jan, 1 Sabarei (Kenya–Ethiopian border) 23 Jan (all DJP), 1 Mountain Lodge 2 and 3 Dec (TS).

Hippolais olivetorum **Olive-tree Warbler R:** recorded at Ngulia 20 Nov to 2 Dec with 7 ringed (GCB, DJP, ÅL, *et al.*); 1 Mountain Lodge 2 Dec (TS).

Hippolais pallida **Olivaceous Warbler D:** 1 Lake Baringo on the early date of 9 Sep (IR).

Locustella fluviatilis **River Warbler R:** 1 Mtito Andei 20 Mar, 1 Bissel in full moult 25 Mar (must have been wintering), and 1 in song Athi River 1 Apr (all DJP); 1 The Ark 3 Nov (BWF), recorded at Ngulia 26 Nov to 29 Dec with 100 ringed, and at Mtito Andei 29 Nov to 21 Dec with 3 ringed (DJP, GCB, ÅL, DH, AH).

Phylloscopus collybita **Chiffchaff R:** 1 Met Station, Mt Kenya 5 Mar (RB), 1 Kericho Arboretum 24 Dec (BWF).

Phylloscopus sibilatrix **Wood Warbler R:** singles Oloololo escarpment, Mara GR 1 and 2 Jan (MACC, BWF), 1 Aberdare Country Club 11 Apr (TS); 1 Lake Baringo 7 Dec (SR, DAT), 1 ringed Ngulia 7 Dec (GCB, DJP, *et al.*).

Sylvia communis **Whitethroat E:** away from the usual sites: 6 at The Ark 2–3 Nov (BWF), 2 Huri Hills 10 Nov (DJP, MACC), 1 Naro Moru 30 Nov (EM, SJ), 1 Hells Gate NP 1 Dec (EM, SJ).

Sylvia nisoria **Barred Warbler EN:** wintering abundantly in *Salvadora persica* thickets along *luggas* 5 km east of Allia Bay and at South Horr in Late Jan (DJP); 1 at The Ark 2 Nov (BWF).

Anthus cervinus **Red-throated Pipit N:** >500 on fallow fields at Poror northwest of Maralal 19–20 Jan (DAT, PG); >200 Athi Dam, Nairobi NP 13 Dec (DAT).

Motacilla alba **White Wagtail R:** singles at Mogotio Feb and Dec (several observers).

Lanius isabellinus **Red-tailed Shrike E:** 2 Usengi, Lake Victoria 16 Nov (EM, SJ).

Lanius minor **Lesser Grey Shrike D:** a southward passage bird at The Ark 3 Nov (BWF).

Lanius nubicus **Nubian Shrike S(B):** 1 Lake Baringo 1–25 Jan (TS).

Lanius senator **Woodchat Shrike S(B):** 1 Alupe (Busia district) 10 Feb (DAT), an adult photographed in Nairobi NP on the early date of 29 Sep (DAT).

Kenya: Afrotropical and oceanic back records

Pachyptila vittata **Broad-billed Prion** 1 found dead on Watamu beach 16 Aug 1988. Race *desolata* confirmed by P.A. Prince (MI, JHF). See *Scopus* 15.

Fregetta tropica **Black-bellied Storm-petrel** a second-year female found dead on Watamu beach 27 Jun 1988 (MI, JHF).

First record for East Africa, see Scopus *15.*

Rostratula benghalensis **Painted Snipe R:** 2 Athi River 27 Nov 1988 (CFT).

Sterna albifrons **Little Tern E:** 1 Lake Nakuru NP 10 Nov 1988 (BWF, WR). It is not known whether this bird, or those regular at Lake Turkana, are Afrotropical *S. albifrons saundersi* (often regarded as a full species) or Palaearctic nominate birds.

Centropus grillii **Black Coucal R:** adult male in a small marsh near Gigiri, Nairobi 3 Dec 1988 (MG).

Bubo capensis **Cape Eagle Owl R:** pair Menengai Crater near Nakuru 24–25 Sep 1988 (MG).

Phoeniculus bollei **White-headed Wood Hoopoe E:** small flock Nairobi NP 14 Aug (ABG, CFT).

Bycanistes bucinator **Trumpeter Hornbill E:** small numbers resident Fourteen Falls near Thika Nov–Dec 1988 (MG).

Tockus hemprichii **Hemprich's Hornbill R:** 2 Menengai Crater near Nakuru 24 Sep 1988 (ABG).

Cossypha natalensis **Red-capped Robin Chat E:** 1 Greenacres School, Limuru 25–28 Aug 1987 (JD). *First record from the Nairobi area.*

Schoenicola platyura **Fan-tailed Warbler M:** several males displaying at Kitimai Dam, Thika 4 Dec 1988 (ABG).

Quelea erythrops **Red-headed Quelea M:** 7–8 on shore of Lake Victoria *c.* 20 km east of Usengi 24 May 1983 (TS).

Kenya: Palaearctic back records

Ciconia nigra **Black Stork R:** 1 Nairobi NP 23 Oct 1988 (MG).

Anas penelope **Wigeon R:** 3 Lake Nakuru 12–13 Dec 1988 (ABG).

Accipiter brevipes **Levant Sparrowhawk S(A):** juvenile at Ngulia 3 Dec 1988 (DJP). *Full details received, accepted by RBC; second Kenya record.*

Pernis apivorus **Honey Buzzard R:** 1 Nairobi NP 6 Nov 1988 (MG).

Falco concolor **Sooty Falcon R:** 1 Lake Baringo 14 Dec 1988 (ABG).

Calidris alba **Sanderling R inland:** 1 Nairobi NP 14 Nov 1988 (ABG).

Calidris temminckii **Temminck's Stint R:** 3 Lake Nakuru NP 13 Nov 1988, 6 Lake Jipe 27 Dec 1988 (ABG).

Sterna hirundo **Common Tern E:** 1 Lake Baringo 4 Nov 1988 (BWF, WR).

Coracias garrulus **Eurasian Roller N:** thousands passing over Buffalo Springs and Samburu GRs 1 Nov 1988 (BWF, WR).

Hippolais icterina **Icterine Warbler R:** 1 Nairobi NP 1 Oct 1988 (MG).

Tanzania: Afrotropical species

Records supplied by N.E. and E.M. Baker, Z. Bhatia, J.H. Fanshawe, D.C. Moyer, and D.K. Richards

Ardea melanocephala **Black-headed Heron B:** 5–6 active nests in Grey Heron *A. cinerea* colony Dar es Salaam 4 May.

Ciconia abdimii **Abdim's Stork N:** thousands near Arusha 2 Feb; >400 over Lake Natron 8 Mar; >700 Serengeti NP 10 Mar; >300 near Olduvai Gorge 14 Mar and >250 Ngorongoro Crater 14 Mar.

Ciconia episcopus **Woolly-necked Stork M:** 1 Serengeti NP 13 Mar.

Leptoptilos crumeniferus **Marabou Stork B:** 14 occupied nets in mixed colony with Yellow-billed Storks *Mycteria ibis* Lake Manyara 23 Nov.

Phoeniconaias minor **Lesser Flamingo N:** hundreds of thousands Lake Manyara and >3000 Ngorongoro Crater lake during Mar, yet fewer than 500 at Lake Natron during the same period.

Dendrocygna bicolor **Fulvous Whistling Duck N:** >200 Tarangire NP 22 Nov.

Nettapus auritus **African Pygmy Goose R:** 2 pairs on shallow pool at Dar es Salaam 29 Oct.

Plectopterus gambensis **Spur-winged Goose E:** 2 Dar es Salaam 22 Sep were the first for the area.

Thalassornis leuconotus **White-backed Duck M:** 5 at Soga, Dar es Salaam 5 Dec.

Neophron percnopterus **Egyptian Vulture N:** 29 beside the river at the south end of Lake Natron 8 Mar.

Circaetus fasciolatus **Southern Banded Snake Eagle R:** 1 Pande Forest near Dar es Salaam 16 Jul.

Aquila wahlbergi **Wahlberg's Eagle B:** pair returned to Dar es Salaam nest site 19 Aug.

Aquila verreauxi **Verreaux's Eagle R:** pair Lake Manyara 6 Mar.

Falco ardosiaceus **Grey Kestrel E:** 4 Mikumi NP 15 Jan. (Mikumi is one of the few areas where this species overlaps with *F. dickinsoni*.)

Falco biarmicus **Lanner Falcon M:** immature around Gol kopjes, Serengeti NP 7 Jan.

Coturnix delegorguei **Harlequin Quail M:** dozens grounded during heavy rain between Arusha and Moshi 20 Nov.

Turnix sylvatica **Button Quail M:** 1 Pande Forest near Dar es Salaam 18 Jul, 1 Same 22 Dec.

Porphyrio alleni **Allen's Gallinule R:** 1 Morogoro 28 Mar.

Sarothrura rufa **Red-chested Pygmy Crake R:** heard *c.* 40 km southeast of Ngwazi, Mufindi district during May; heard daily at Tatanda, southwestern Tanzania 28 Mar to 18 Jun.

Rostratula benghalensis **Painted Snipe R:** 1 near Ndutu, Serengeti NP 10 Jan, 7 at river crossing in Tarangire NP 22 Nov.

Charadrius pallidus **Chestnut-banded Sandplover M:** 4–6 Ngorongoro Crater lake 3–7 Feb.

Vanellus lugubris **Senegal Plover M:** adults with well-grown young Mikumi NP 15 Jan, yet no proof of local breeding.

Vanellus melanopterus **Black-winged Plover B:** breeding Serengeti NP 11 Jan.

Rhinoptilus chalcopterus **Violet-tipped Courser R:** 1 in coastal bush 6 May after several days of heavy rain in the Dar es Salaam area.

Glareola pratincola **Common Pratincole N:** *c.* 500 Serengeti NP 10 Jan, *c.* 500 Lake Manyara NP 6 Mar.

Pterocles exustus **Chestnut-bellied Sandgrouse N:** >600 drinking at dusk at south end of Lake Natron 8 Mar.

Streptopelia lugens **Dusky Turtle Dove E:** four sightings below 1000 m in riverine woodland, Mikumi NP, Jan.

Agapornis lilianae **Lilian's Lovebird:** flock of 15 near Ligunga (*c.* 45 km north of Mozambique border) 25 Sep.

First positive record for Tanzania and East Africa.

Cercococcyx montanus **Barred Long-tailed Cuckoo R:** heard daily in southern Uzungwa Mts in Jul.

Centropus grillii **Black Coucal R:** a few Serengeti NP 13 Mar.

Tyto alba **Barn Owl M:** 2 Serengeti NP Mar.

Bubo capensis **Cape Eagle Owl R:** female found dead 100 km south of Iringa at 1980 m in May; there are very few Tanzania records.

Glaucidium capense **Barred Owlet R:** 1 Mikumi NP 27 Mar.

Otus leucotis **White-faced Scops Owl R:** heard calling early Jun in *miombo* woodland at Tatanda, southwestern Tanzania.

Caprimulgus donaldsoni **Donaldson-Smith's Nightjar R:** 1 at south end of Lake Natron 8 Mar.

Caprimulgus fossii **Gabon Nightjar R:** 1 at south end of Lake Natron 9 Mar.

Merops albicollis **White-throated Bee-eater N:** >50 at south end of Lake Natron early Mar.

Merops nubicus **Carmine Bee-eater D:** first arrivals at Dar es Salaam 29 Oct.

Coracias spatulata **Racquet-tailed Roller R:** pair 80 km NNW of Morogoro 28 Nov—at the northern limit for the species.

Eurystomus glaucurus **Broad-billed Roller M:** 35 moving ENE at dusk 26 Mar Mikumi NP.

Prodotiscus zambesiae **Eastern Honeybird M:** 1 Tatanda, southwestern Tanzania 7 Jun.

Hirundo atrocaerulea **Blue Swallow R:** 3 Uhafiwa, southern Uzungwa Mts 31 Jul.

Hirundo griseopyga **Grey-rumped Swallow M:** 15 Ngorongoro Conservation Area 14 Jan.

Corvus splendens **Indian House Crow E:** 2 Miandizi (60 km west of Dar es Salaam) 25 Mar.

Coracina pectoralis **White-breasted Cuckoo Shrike R:** 2 in mixed species flock early Jun near Tatanda; flock also included a Spotted Creeper *Salpornis spilonota.*

Modulatrix orostruthus **Dappled Mountain Robin S(B):** ten netted at Uhafiwa, southern Uzungwa Mts between 19 and 30 Jul.

Cercomela familiaris **Red-tailed Chat E:** 1 Mikumi NP 13 Oct: first record of the species below 500 m.

Cossypha natalensis **Red-capped Robin Chat M:** influx of juveniles at Pugu Hills forest near Dar es Salaam 13 May.

Dryocichloides anomalus **Olive-flanked Ground Robin M:** 1 at Lugoda, Mufindi district 3 Jul; 2 in secondary forest at Uhafiwa, southern Uzungwa Mts 5 and 11 Jul.

Dryocichloides lowei **Iringa Ground Robin R:** 10 netted in secondary forest (alongside previous species) at Uhafiwa during Jul.

Swynnertonia swynnertoni **Swynnerton's Robin S(A):** total of 16 netted at Uhafiwa in Jul.

Turdus fischeri **Spotted Ground Thrush R:** 2 Pugu Hills near Dar es Salaam 13 May.

Apalis chariessa **White-winged Apalis S(B):** observed almost daily at Uhafiwa during Jul, often in mixed canopy species feeding flocks.

Bathmocercus winifredae **Mrs Moreau's Warbler M:** common and vocal Ukaguru Mts 17 Jun.

Heliolais erythroptera **Red-winged Warbler R:** 1 Mikumi town 6 Jul.

Sylvietta brachyura **Northern Crombec M:** pair at south end of Lake Natron 8 Mar.

Muscicapa caerulescens **Ashy Flycatcher M:** 2 Pugu Hills forest near Dar es Salaam 30 Sep; uncommon at this site.

Batis soror **East Coast Batis M:** pair in coastal woodland close to Wami River 11 Jun.

Bias musicus **Black and White Flycatcher E:** 1 Pugu Hills forest, Dar es Salaam 19 Dec was the first record from the site.

Anthreptes reichenowi **Plain-backed Sunbird M:** several in Pande Forest near Dar es Salaam 16 Jul (southern limit of race *yokanae*).

Nectarinia mariquensis **Mariqua Sunbird M:** recorded Pande Forest near Dar es Salaam 16 Jul (uncommon in coastal areas).

Passer domesticus **House Sparrow EB:** several pairs breeding Dar es Salaam 24 Sep and several now established at the cement plant 26 km north of the city.

Ploceus burnieri **Kilombero Weaver M:** some adult males in breeding plumage at Ifakara 8°08S, 36°40E, 14 Oct. A recently described species, see Baker, N.E. & Baker, E.M. (1990): A new species of weaver from Tanzania, *Bulletin of the British Ornithologists' Club* 110: 51–58 and Plate 1.

Serinus reichardi **Stripe-breasted Seedeater R:** 6–8 seen daily at Ngwazi, Mufindi district during May, and 4 seen in a mixed species flock at Tatanda in Jun.

Tanzania: Palaearctic species

The following records were supplied by N.E. and E.M. Baker, Z. Bhatia, J.H. Fanshawe, and D.K. Richards.

Ciconia ciconia **White Stork N:** thousands near Arusha 2 Feb, >4000 Manyara to Lake Natron 7 Mar, common Serengeti-Ngorongoro 10–15 Mar including a single flock of >2000.

Ciconia nigra **Black Stork R:** 2 Seronera, Serengeti NP 13 Mar.

Anas acuta **Pintail R:** 5 Lake Ndutu, Serengeti NP 10 Jan.

Buteo buteo vulpinus **Steppe Buzzard R:** >30 moving south in small groups 15 Oct Kilombero Valley, foothills of the Uzungwa Mts.

Hieraaetus pennatus **Booted Eagle R:** single adults Mikumi NP 27 Mar, Dar es Salaam 23 Apr, and Ifakara 13 Oct.

Pernis apivorus **Honey Buzzard R:** an adult 26 Mar Mikumi NP.

Falco naumanni **Lesser Kestrel N:** occurred in numbers exceeding 300 Naabi Hill area, Serengeti NP 9–14 Mar.

Charadrius asiaticus **Caspian Plover N:** hundreds Serengeti NP 7–13 Mar.

Pluvialis squatarola **Grey Plover R inland:** 4 Lake Natron 8 Mar.

Numenius arquata **Curlew R inland:** 1 Hidden Valley lakes, eastern Serengeti NP 10 Jan, 1 Lake Manyara NP 4 Mar.

Numenius phaeopus **Whimbrel R inland:** 8 Lake Ndutu, Serengeti NP 8 Mar.

Tringa erythropus **Spotted Redshank R:** 1 Hidden Valley lakes, eastern Serengeti NP 10 Jan, 1 Ngorongoro Crater lake 15 Mar.

Limosa limosa **Black-tailed Godwit R:** 1 Lake Manyara NP 4–6 Mar.

Calidris temminckii **Temminck's Stint R:** 1 on freshwater pool at Lake Eyasi 26 Nov. *The third record for Tanzania.*

Larus ridibundus **Black-headed Gull R:** several records of up to 7 in Serengeti NP 10–14 Jan.

Cuculus canorus **Eurasian Cuckoo D:** up to 4 at Naabi Hill, Serengeti NP 11–14 Mar were perhaps already on passage.

Caprimulgus europaeus **Eurasian Nightjar R:** >30 moving north along the beach at Dar es Salaam in the first 15 min after sundown 30 Apr.

Merops apiaster **Eurasian Bee-eater N:** hundreds Serengeti NP 25 Sep.

Coracias garrulus **Eurasian Roller E:** common Lake Manyara–Lake Natron–Serengeti NP early Mar.

Oriolus oriolus **Golden Oriole E:** several Lake Manyara NP 4–5 Mar, >6 Naabi Hill, Serengeti NP 14 Mar.

Irania gutturalis **Irania E:** 1 present, probably wintering, Naabi Hill entrance to Serengeti NP 4 Jan to 14 Mar; several Lake Manyara NP 4–5 Mar; abundant, with several males singing, Olduvai Gorge 8 Mar.

Anthus cervinus **Red-throated Pipit E:** .5 at muddy ponds near Naabi Hill, Serengeti NP mid Mar.

Anthus trivialis **Tree Pipit E:** 2 Naabi Hill, Serengeti NP 14 Mar, 1 Mikumi NP 27 Mar.

Lanius isabellinus **Red-tailed Shrike E:** 1 Mikumi NP 15 Jan was the first record for the park.

Tanzania: Oceanic species, back records

Phaethon lepturus **White-tailed Tropicbird S(B):** 1 southeast of Dar es Salaam 13 Mar 1988 (TB, IKP, KH, OT).

Sula dactylatra **Masked Booby RB:** 1500 adults present on Latham Island 30 Jan 1988 with >1000 juveniles (822 downy young and 275 fledged juveniles). In addition, 40 pairs had nests with eggs (almost all with 2 eggs). By 13 Mar breeding seemed to have finished as only 20 downy young seen, but >750 in full juvenile plumage (TB, IKP, KH, OT).

Fregata minor **Greater Frigatebird S(A):** 2 *c.* 10–20 km northeast of Kilwa Masoko (south of Mafia Island) 12 Mar 1988 (TB, IKP, KH, OT).

Uganda: Afrotropical species

Records from D.E. Pomeroy, J. Chemonges, C. Dranzoa, R. Wrangham, P. Gumonye-Mafabi, and L. Rothen

Ixobrychus sturmii **Dwarf Bittern R:** 1 near Kyegegwe, Kabarole district 22 Feb.

Ciconia abdimii **Abdim's Stork N:** *c.* 2000 moving SW over Kakoge, 90 km north of Kampala 4 Mar.

Ephippiorhynchus senegalensis **Saddle-billed Stork B:** 2 adults and 2 juveniles Kakoge swamp, 90 km north of Kampala 20 Apr.

Accipiter melanoleucus **Great Sparrowhawk M:** 2 on the northern boundary of Queen Elizabeth NP 13 Sep.

Glareola nuchalis **White-collared Pratincole N:** *c.* 100 Murchison Falls NP 12 Aug.

Rhaphidura sabini **Sabine's Spinetail E:** several over Rabongo Forest, Murchison Falls NP 13 Aug.

Spreo superbus **Superb Starling E:** flock of *c.* 12 *c.* 5 km south of Murchison Falls NP 11 Aug was the first record for the park.

Uganda: Palaearctic species

Ciconia ciconia **White Stork R:** 7 near Kikorongo, Queen Elizabeth NP 13 Apr, 7 Kibogo, Hoima district 28 Apr.

Pernis apivorus **Honey Buzzard R:** 3 Masindi Hill 22 Apr.

Charadrius alexandrinus **Kentish Plover RE:** 1 Lake Kikorongo 31 Dec. Full details received, accepted by the RBC.

First record for Uganda.

Numenius arquata **Curlew E:** 1 Lake Munyanyange, Queen Elizabeth NP 15, 17 Jan.

Tringa erythropus **Spotted Redshank R:** 1 Kajansi, near Kampala 28 Jan.

Tringa totanus **Redshank R:** 1 Lake Munyanyange, Queen Elizabeth NP 15 Jan.

Phalaropus **sp. phalarope:** 1 Lake Munyanyange, Queen Elizabeth NP 15 and 17 Jan. Description received suggests *P. lobatus*.

List of observers for Kenya records

RA: R. Allison
ALA: A.L. Archer
GCB: G.C. Backhurst
RB: R. Bishop
CJC: C.J. Campion
MC: M. Clifton
MACC: M.A.C. Coverdale
IC: I. Craig
JRPC: J.R.P. Cumberlege
JD: J. Dawson
JHF: J.H. Fanshawe
BWF: B.W. Finch
DF: D. Fisher
MG: M. Gawn
ABG: A.B. Gawn
RG: R. Glen
PG: P. Goriup
DH: D. Hasselquist
AH: A. Hedenström
PH: P. Hemphill
DTH: D.T. Holyoak
MI: M. Irwin
SJ: S. Jensen
ADL: A.D. Lewis
ÅL: Å. Lindström
ML: M. Lissimore
EM: E. Mølgaard
FM: F. Møller
DJP: D.J. Pearson
BP: B. Penny
KP: K. Pickering
DKR: D.K. Richards
IR: I. Robertson
SR: S. Rooke
MR: M. Ross
WR: W. Russell
MS: M. Sinclair
DS: D. Slater
TS: T. Stevenson
CFT: C. & F. Taylor
DA: D.A. Turner
RW: R. Wild
DEW: D.W. Wolf
PW: P. Wootton

First and last dates of some Palaearctic migrants in Kenya

Species	last recorded	first recorded
Cuculus canorus	27 Mar Ngare Ndare	29 Nov Samburu
Apus apus	—	6 Sep Samburu
Merops apiaster	29 Mar Nairobi	10 Sep Baringo
Coracias garrulus	26 Mar Ngare Ndare	20 Nov Tsavo West
Delichon urbica	—	22 Sep near Gedi
Riparia riparia	—	6 Sep Mara GR
Oriolus oriolus	12 Mar Fourteen Falls	1 Oct Nairobi
Cercotrichas galactotes	—	29 Oct Ngulia
Irania gutturalis	—	1 Nov Buffalo Springs
Luscinia luscinia	—	29 Oct Ngulia
L. megarhynchos	—	30 Oct Ngulia
Monticola saxatilis	7 Apr Nairobi	3 Nov The Ark
Oenanthe isabellina	—	8 Oct Ngong Hills
O. oenanthe	7 Apr Nairobi	6 Sep Mara GR
O. pleschanka	—	20 Oct Amboseli
Saxicola rubetra	9 Apr Nairobi	8 Sep Baringo
Acrocephalus arundinaceus	9 Apr Nairobi	1 Dec Ngulia
A. griseldis	—	2 Nov The Ark
A. palustris	—	28 Oct Ngulia
A. schoenobaenus	—	15 Nov Kisumu
A. scirpaceus	—	3 Nov The Ark
Hippolais languida	—	28 Nov Ngulia
H. olivetorum	—	20 Nov Ngulia
H. pallida	—	9 Sep Baringo
Locustella fluviatilis	—	3 Nov The Ark
Phylloscopus trochilus	1 May Nairobi	17 Sep Mara GR
Sylvia atricapilla	15 Mar Nairobi	6 Nov The Ark
S. borin	7 Apr Nairobi	28 Nov Ngulia
S. communis	9 Apr Nairobi	29 Oct Ngulia
S. nisoria	—	1 Nov Buffalo Springs
Muscicapa striata	9 Apr Nairobi	17 Sep Mara
Anthus cervinus	—	10 Nov Huri Hills
A. trivialis	7 Apr Nairobi	10 Nov Huri Hills
Motacilla cinerea	—	11 Sep Kakamega
M. flava	7 Apr Nairobi	6 Sep Buffalo Springs
Lanius collurio	19 Apr Nairobi	29 Oct Ngulia
L. isabellinus	—	4 Nov Ngulia
L. minor	20 Apr Tsavo West	—

E.A.N.H.S. Nest Record Scheme: 1985–1989

L. A. Bennun

This report covers the period 1985 to 1989, during which time some 600 cards were submitted to the scheme by 52 observers. The last report was for the year 1982; cards for the years 1983–1984 are temporarily unavailable and a report for these years will be produced later. In 1982, an exceptionally good year for the scheme, 57 observers contributed 1000 cards (Taylor 1983). Since then, unfortunately, annual contributions have declined to about 10 per cent of this level. I hope this report will reassure contributors that the Scheme is alive and well, and will serve to remind them that breeding records of *all* species are still required.

As usual, most of the records reported here are from Kenya. However, there were some valuable contributions from a few individuals in the other East African countries, notably Jonathan Baranga and Derek Pomeroy in Uganda and John Fanshawe in Tanzania.

The main purpose of this report is to make new data on the breeding of East African birds as accessible as possible. Available data on laying, hatching and fledging dates and clutch and brood size are included for each species, together with any other points of special interest. Many cards, of course, contain additional information on aspects such as habitat, season, behaviour and nest construction: such details can be obtained from the organizer if required. All cards have been included except those with indefinite records for common species. Breeding records published in *Scopus* or other journals are not included here unless the authors have also filled in nest record cards.

Since the last Nest Record Scheme report was published, distributional data on Kenyan birds has been summarized in atlas form (Lewis & Pomeroy 1989). All records in the card collection up to the end of 1983 were scrutinized for the atlas. The first atlas update (Lewis 1989) gave some additional breeding records but did not make use of any new information from the Nest Record Scheme. In this report, new breeding records for particular atlas squares are indicated by asterisks preceding the code of the square in question: one asterisk (e.g. *37A) indicates probable breeding and two asterisks (e.g., **75C) confirmed breeding. (See Lewis & Pomeroy 1989 for the criteria used to define these terms and for the atlas square codes.) Asterisks enclosed in square brackets ([*] or [**]) indicate the first probable or confirmed breeding records since 1970.

The format largely follows that of the last report. There have been slight alterations so that sequences of data from particular nests can be presented more easily. All localities are in Kenya unless followed by (T), for Tanzania, or (U), for Uganda. Individual records for each locality are separated by semi-colons; commas separate sequential records for the same breeding attempt. Localities within each country are listed in chronological order of their earliest records. Where several records are given for the same date, or where clutches or young of the same size or age are given for several dates, the records are linked by ampersands (&).

Abbreviations used

ad(s): adult(s)	C: clutch	d: day (s) old
CA: Conservation Area	GR: Game Reserve	NP: National Park

Dates are given in the form: day month year.

Contributors to the Nest Record Scheme 1985–1989

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EANHS nest records 1985–1989

STRUTHIONIDAE OSTRICH

***Struthio camelus* Ostrich.** Nairobi NP: C23 (inner) + 25 (outer) 31.8.87; C24 (inner) + 20 (outer) 11.9.87, female incubating inner eggs, 17.9 outer eggs gone; pair + young one-third adult size 9.88; pair + young one-quarter adult size 9.88.

PODICIPEDIDAE GREBES

***Podiceps nigricollis* Black-necked Grebe.** Longido (T): adult + 2 young 28.7.89.

***Tachybaptus ruficollis* Little Grebe.** Nairobi: pair + 1 very small young 6.12.86; pair + 2 very small young 10.2.87; pair + 1 half-grown young 10.4.87.

PELECANIDAE PELICANS

***Pelecanus onocrotalus* White Pelican.** L. Manyara (T): colony of *c.* 170 nests 9.3.89.

***Pelecanus rufescens* Pink-backed Pelican.** L. Manyara (T): at least 3000 adults, many in breeding plumage 30.4.89.

PHALACROCORACIDAE CORMORANTS

***Phalacrocorax carbo* Greater Cormorant.** Nairobi NP: [adults] + nest 19.6.87 (* 75B). L. Manyara (T): at least 200 adults, 80 nests 30.4.89.

ARDEIDAE HERONS

***Ardea melanocephala* Black-headed Heron.** Hunter's Lodge, Kiboko: 8 nests + large young 19.1.87, 2 dead young + 8 nests occupied most with 2 young nearly fledged 30.1. Bamburi, Mombasa: many adults building 1.2.87.

***Ephippiorhynchus senegalensis* Saddle-billed Stork.** Nairobi NP: pair + 2 large young (adult size) 1.11.89 (* 75B).

THRESKIORNITHIDAE IBISES, SPOONBILLS

***Bostrychia hagedash* Hadada.** Nairobi: adult incubating 28.3–26.4.87, 2 nestlings 26.4, 2 nestlings killed by Great Sparrowhawk *Accipiter melanoleucus* and one eaten 12.5; adult incubating 11.10–7.11.87, 1 nestling 7.11, 2 nestlings 9.11, 1st left nest 17.12, 2nd left 18.12; pair building 3.88, adult incubating 23.3–21.4, 2 nestlings 21.4, ?raptor attack 22.4, empty nest 23.4.

PHOENICOPTERIDAE FLAMINGOS

***Phoenicopterus ruber* Greater Flamingo.** L. Natron (T): 1500–2000 pairs nested 6–7.87.

ANATIDAE DUCKS, GEESE

***Dendrocygna viduata* White-faced Whistling Duck.** Nairobi: pair + 5 young 14.2.89, 18.2, + 4 young 23.2; pair + 11 young 11.2.89, 14.2, 18.2, + 8 young 23.2.

Alopochen aegyptiacus **Egyptian Goose.** Athi River: C3 3.6.87; Samburu NP: pair + 4–5 young 19.12.89; Ngorongoro CA (T): pair + small young (1) 31.12.86; pair + 2 small young 3.3.87. Serengeti NP (T): pair + 4 small young 27.4.87.

Anas capensis **Cape Wigeon.** Ngorongoro CA (T): 2 pairs + 6 young 23.6.87; pair + 4 young 13.7.87.

Anas erythrorhynchos **Red-billed Teal.** Ngorongoro Crater (T): pair + 10 large young and pair + 7 young 7.5.87.

Thalassornis leuconotus **White-backed Duck.** Nairobi: pair + 5 small young 19.10.77.

SAGITTARIIDAE SECRETARY BIRD

Sagittarius serpentarius **Secretary Bird.** El Karama Ranch, Laikipia: adult incubating nestlings 21.8.85. Ngorongoro CA (T): small nestling 15.1.87.

ACCIPITRIDAE BIRDS OF PREY

Gyps rueppellii **Rüppell's Vulture.** Hell's Gate, Naivasha: pair feeding 1 large nestling 1.85.

Accipiter melanoleucus **Great Sparrowhawk.** Nairobi: 2 fledglings screaming by nest 17.11.87, screaming + following adult 28.11, 15.12 (same nest used at least 3 times 1981–1987). Mombasa: 1 nestling 30.3.86.

Accipiter minullus **Little Sparrowhawk.** Greenacres School: 1 fledgling 12.87, last seen 2.88; 2 fledglings 25.10.88.

Accipiter tachiro **African Goshawk.** Nairobi: 1 fledgling calling to adult 27.12.89.

Aquila verreauxi **Verreaux's Eagle.** Cliffs W of Ngong Hills: pair incubating, broken egg in nest 100 m away 28.6.87, small 2 young (*c.* 2 weeks old) 14.7.

Aquila wahlbergi **Wahlberg's Eagle.** Mombasa: 1 nestling 30.3.86 (** 114B).

Buteo augur **Augur Buzzard.** Kitengela: 1 fledgling in nest 13.7.89, flying 2.8, fed by adult 16.8, seen up to 3.10 (**75D). Chania River, Aberdares NP: large nestling 29.12.89 (**62B). Loliondo (T): adult + 1 fledgling 26.7.89.

Stephanoaetus coronatus **Crowned Eagle.** L. Naivasha: feathered nestling 8.3.89, 10.3.

Milvus migrans **Black Kite.** Nairobi: 3 adults building and incubating 5.89 until 20.8.

Elanus caeruleus **Black-shouldered Kite.** Serengeti NP (T): adult feeding 1 fledgling 29.4.87.

Falco biarmicus **Lanner Falcon.** Cliffs W of Ngong Hills: female incubating C2, 28.6.87 (bred same cliff 1986).

Falco tinnunculus **Kestrel.** L. Magadi: pair + 2 nestlings 13.8.89; pair + 2 large nestlings 6.1.90.

PHASIANIDAE QUAILS, FRANCOLINS

Coturnix delegorguei **Harlequin Quail.** Olorgesailie: female + 4–5 small young 13.6.86 & 18.6.86.

Francolinus coqui **Coqui Francolin.** Serengeti NP (T): pair + 1 young 8.4.86.

Francolinus leucoscepus **Yellow-necked Spurfowl.** Nairobi NP: adult + 2 young-3 and adult + 4–5 young both one-third adult size 22.8.86; C3 28.4.87. Ololoitikoshi River, Kitengela: C3 21.5.87. Olorgesailie: adult + small 2 young 17.7.86; adult + 2 young one-quarter adult size 7.8.86 (**75C).

Francolinus sephaena **Crested Francolin.** Olorgesailie: C4 29.4.86, incubating 30.4, 1.5. Nyabushozi (U, atlas square 56B) adult + 3 small young 31.12.86.

Guttera edouardi **Crested Guineafowl.** Kakamega Forest: pair + 3 young *c.* 10 cm tall 15.4.89.

TURNICIDAE BUTTON QUAILS

Turnix sylvatica **Button Quail.** Q. Elizabeth NP (U): female + 2 very small young 1.90.

GRUIDAE CRANES

Balearica pavonina **Crowned Crane.** Nairobi NP: pair + 3 young one-half adult size 27.8.86; pair + 2 young one-sixth adult size 29.6.89. Ngorongoro Crater (T): pair + 2 small young 22.4.86.

RALLIDAE RAILS, CRAKES

Gallinula chloropus **Moorhen.** Nairobi: adult feeding 1 young 25.10.89.

Limnocorax flavirostra **Black Crake.** Nairobi NP: young (1) *c.* half grown 18.2.89.

Porphyrio alleni **Allen's Gallinule.** L. Baringo: adult + 1 young 17.8.84.

Porphyrio porphyrio **Purple Gallinule.** Nairobi: 4 adults + 4 young, 25.10.89.

OTIDIDAE BUSTARDS

Eupodotis senegalensis **White-bellied Bustard.** Serengeti NP (T): pair + 1 young one-third adult size 19.3.87.

Otis kori **Kori Bustard.** Ololoitikoshi River, Kitengela: C2 13.5.87 (**75D). Serengeti NP (T): female + small young 28.4.87. Ngorongoro Crater (T): female feeding small young 6.5.87.

JACANIDAE JACANAS

Actophilornis africanus **Jacana.** L. Baringo: pair + 4 small young *c.* 15 cm tall & pair + 2 young *c.* 20 cm tall 17.8.84.

CHARADRIIDAE PLOVERS

Charadrius pecuarius **Kittlitz's Sandplover.** Nakuru: 2 young half-grown 23.12.88. Nairobi NP: pair + 1–2 small young <1 week old 11.1.90. Serengeti NP (T) C1 14.3.87. Ngorongoro CA (T): 2 small young 22.6.87. Mweya, Queen Elizabeth NP (U): C2 21.8.85, adult covering nest 30.8, empty nest 6.9 adult + young nearby; C2 30.8.85 & 6.9.85 & 20.5.86; C2 18.4.87, empty nest 26.4 no shells.

Charadrius tricollaris **Three-banded Plover.** Ol Ari Nyiro, Laikipia: C2 6.3.89 (**50A).

Vanellus armatus **Blacksmith Plover.** Nairobi NP: adult incubating C4 3.5.89, C1 + 2 young 16.5, 3 young 18.5. Serengeti NP (T): C1 and 1 large young and pair + 2 small young 14.3.87; 2 x adults incubating C3 27.4.87. Ngorongoro CA (T): adult incubating C4 28.4.87; adult incubating C3 6.5.87; adult incubating C1 & incubating C2 & 2 large young and pair + 4 small young 7.5.87.

Vanellus coronatus **Crowned Plover.** Buffalo Springs GR: pair incubating C2 2.3.87, 3.3. Nairobi NP: incubating C2 16.3.87. Kitengela: C3 21.4.87; C2 23.5.87. Serengeti NP (T): C1 & C2 14.3.87. Ngorongoro CA (T): adult incubating C2 7.5.87. Mara GR: 1 small young *c.* 12 cm high 11.8.84.

Vanellus melanopterus **Black-winged Plover.** Ol Ari Nyiro, Laikipia: pair + 2 very small young 5.5.89 (**50A). Serengeti NP (T): C3 11.1.89.

Vanellus spinosus **Spur-winged Plover.** Nairobi NP: adult + 2 young 12.5.87. Buffalo Springs GR: pair + 2 young 2–3 weeks old & pair + 2 small young 19.12.89. Mweya, Queen Elizabeth NP (U): C3 22.5.86; C0 8.5.87, C2 11.5, C4 15.8.

BURHINIDAE THICKNEES

Burhinus capensis **Spotted Thicknee.** Nairobi NP: pair incubating C2 21.3.87, 22.3, pair + 2 small young 29.3; adults + 1 young half-grown 8.12.89. Ngorongoro CA (T): 8 adults + 1 very small young 9.1.89.

Burhinus vermiculatus **Water Thicknee.** Mweya, Queen Elizabeth NP (U): C2 20.8.85, incubating C2 29.8 & 6.9.

GLAREOLIDAE COURSERS, PRATINCOLES

Cursorius temminckii **Temminck's Courser.** Ngorongoro CA (T): pair + 1 small young 9.1.89.

Rhinoptilus africanus **Two-banded Courser.** Serengeti NP (T): adult + small 1 young 24.6.86.

Rhinoptilus cinctus **Heuglin's Courser.** Olorgesailie: adult incubating C2 19.9.86, 30.9, adult by nest 3.10, empty nest 10.10 (**75C). Lewa Downs: pair incubating C2 2.9.89 (**51C).

PTEROCLIDAE SANDGROUSE

Pterocles exustus **Chestnut-bellied Sandgrouse.** Gelai Lumbwa (T): female incubating C3 24.7.89, male gave distraction display.

COLUMBIDAE DOVES, PIGEONS

Columba guinea **Speckled Pigeon.** Samburu NP: 2 large young 26.7.89.

Oena capensis **Namaqua Dove.** Olorgesailie: pair incubating C1 + 1 small nestling 16.3.85; 2 small nestlings 1.8.85; C2 6.5.86; C2 4.6.86, male incubating 2 small nestlings 15.6 ([**] 75C).

Streptopelia lugens **Dusky Turtle Dove.** Nairobi: pair building 24.12.89, incubating 30.12, abandoned after rain 1.90, incubating again 3.3.90.

Streptopelia semitorquata **Red-eyed Dove.** Nairobi: adult feeding 1 fledgling 22.2.86; adult feeding 2 young 22.9.87.

Streptopelia senegalensis **Laughing Dove.** Olorgesailie: C2 7.6.85, 14.6; C2 20.5.86, 2 small nestlings *c.* 4 d 2.6, 2 large nestlings 8.6, 1 fledgling 12.6; C2 8.6.86, 1 small nestling 10.6, 12.6; C2 24.5 morning., empty nest afternoon; C2 24.5.86, 2 small nestlings *c.* 2 d 31.5, 2 large nestlings 12.6. Nairobi: C1 3.10.88, adult incubating until 6.10, 1 nestling some feathers out pin 10.10, well-feathered 12.10, empty nest 15.10.

PSITTACIDAE PARROTS, LOVEBIRDS

Poicephalus cryptoxanthus **Brown-headed Parrot.** Shimoni: 1 fledgling 19.9.86 (**114C).

Poicephalus rufiventris **Orange-bellied Parrot.** Tana River, Kora NR: pair feeding 26.1.86 (**64B). *Very few dated breeding records.*

MUSOPHAGIDAE TURACOS

Corythaixoides leucogaster **White-bellied Go-away Bird.** El Karama Ranch, Laikipia: adult feeding 1 fledgling 2.4.86.

Crinifer zonurus **Eastern Grey Plantain Eater.** Mt Elgon: pair feeding 2 young *c.* two-thirds adult size, adult incubating at dusk 5.2.84 ([**]36D).

Tauraco hartlaubi **Hartlaub's Turaco.** Nairobi: building 7.9.89, ?incubating 13.9, remains of C2 under nest 19.9.

CUCULIDAE CUCKOOS

Chrysococcyx caprius **Didric Cuckoo.** Serengeti NP (T): pair Rufous Sparrows *Passer motitensis* feeding 1 fledgling 15.3.87. Olorgesailie: 2 x 1 nestling in nests of Masked Weavers *Ploceus intermedius*, weights 7.4 g & 13.1 g 22.5.86, 16.3 g & 19.0 g 25.5, 24.0 g flight feathers still in pin & 26.4 g 28.5, both subsequently fledged (see *P. intermedius* below).

Chrysococcyx klaas **Klaas' Cuckoo.** Nairobi: pair Bronze Sunbird *Nectarinia kilimensis* feeding 1 fledgling 29.10.88. Ngobit: pair Chin-spot Batis *Batis molitor* feeding 1 fledgling 15–20.5.89 (** 62B).

Centropus monachus **Blue-headed Coucal.** Kakamega NR: adult feeding 1 fledgling 28.5.89; C1 22.6.89 ([**] 48D).

Centropus superciliosus **White-browed Coucal.** Diani: pair feeding (at least) 2 small fledglings 10–12.10.88. Serengeti NP (T): 3 nestlings 12.4.86; 4 nestlings 13.4.86.

TYTONIDAE BARN OWLS

Tyto alba **Barn Owl.** Nairobi: large 3 fledglings 14.9.86.

STRIGIDAE OWLS

Bubo lacteus **Verreaux's Eagle Owl.** Mweya, Queen Elizabeth NP (U): 1 nestling 6.4.84.

Ciccaba woodfordii **African Wood Owl.** Nairobi: 1 nestling 23.9.87.

CAPRIMULGIDAE NIGHTJARS

Caprimulgus clarus **Slender-tailed Nightjar.** Olorgesailie: C2 21.5.86, adult incubating 24.5, empty nest dead chick nearby 29.5; male incubating small 2 young 16.6.86 ([**] 75C).

Caprimulgus fraenatus **Dusky Nightjar.** Kiweyu, north Kenya coast: 1 fledgling struck by car, 9.89 (** 92A).

Caprimulgus poliocephalus **Montane Nightjar.** Kakamega Forest: adult incubating C1 11.1.88, empty nest 12.1.

Caprimulgus tristigma **Freckled Nightjar.** Serengeti NP (T): adult incubating C1 26.3.86.

APODIDAE SWIFTS, SPINETAILS

Apus affinis **Little Swift.** Shimoni: adults feeding young near fledging in several nests 15.9.86. Nairobi: small colony of 4–5 nests active 7.88 to 12.88.

COLIIDAE MOUSEBIRDS

Colius striatus **Speckled Mousebird.** Nairobi: adult feeding 1 fledgling 4.7.88, 6.7, independent feeding 16.7; 2 nestlings 13.8.86; adult incubating 18.9.89, 25.9, incubating 2 nestlings 5.10, 2 nestlings 12.10, flew 15.10. Kakamega Forest: C2 14.1.88.

TROGONIDAE TROGONS

Apaloderma narina **Narina's Trogon.** Karura forest, Nairobi: female feeding 1 fledgling 15.1.86.

ALCEDINIDAE KINGFISHERS

Halcyon chelicuti **Striped Kingfisher.** Near Voi River, Tsavo East NP: large nestling 4.11.86; C4 13.11.86, 1 nestling + C1 9.12, 1 nestling 13.12.

Ispidina picta **Pygmy Kingfisher.** Ishasha, Queen Elizabeth NP (U): feeding 2.2.89, 12.2. Lolgorien: digging 17.12.86, in hole 3.1.87, hole later dug open.

MEROPIDAE BEE-EATERS

Merops oreobates **Cinnamon-chested Bee-eater.** Nairobi: adult feeding 1 fledgling 26.2.86; pair digging 26.12.86, 3 adults feeding 25–28.1.87, 2 nestlings dead below nest 3.2.

Merops pusillus **Little Bee-eater.** Olekomonge River: pair feeding 2 fledglings 10.12.89 (**75C). Serengeti NP (T): feeding 31.12.86.

CORACIIDAE ROLLERS

Coracias caudata **Lilac-breasted Roller.** Athi river, Tsavo East NP: pair feeding 15.4.89.

UPUPIDAE HOOPOES

Upupa epops **Hoopoe.** L. Naivasha: pair feeding 1 fledgling in nest 10.10.86, 11.10, 12.10. Ulukenya (Hopcraft's Ranch): adult feeding 1 nestling 6.9.87 (**76C).

PHOENICULIDAE WOOD HOOPOES

Phoeniculus cyanomelas **Scimitarbill.** Nairobi: pair feeding 1 Greater Honeyguide *Indicator indicator* fledgling. Shimoni: pair + 3 fledglings 12.10.89 (**114C).

Phoeniculus granti **Violet Wood Hoopoe.** Tana river Primate Reserve: pair at nest containing nestlings 23.12.88.

Phoeniculus purpureus **Green Wood Hoopoe.** El Karama Ranch, Laikipia: adults took over nest from Red-billed Oxpecker *Buphagus erythrorhynchus* 4.5.85, adult in nest 12.5, 17.5, fed by others 28.5, carrying out droppings 5.6, 3 adults feeding 21–23.6, 4 feeding 24.6, 1 fledgling out 24.6, all fledglings out with adults by 8.7. Shimoni: adult feeding mate in hole, nestlings heard 11.5.86 (**114C).

BUCEROTIDAE HORNBILLS

Bycanistes subcylindricus **Black and White Casqued Hornbill.** Kampala (U): male feeding 7.12.87–11.1.88, 1 fledgling outside 14.1; male feeding 8.2.88–5.3, 1 fledgling outside 7.3.

Tockus deckeni **Von der Decken's Hornbill.** Near HQ Tsavo East NP: female incubating 12.11.86.

Tockus eryrthrorhynchus **Red-billed Hornbill.** Near Voi River, Tsavo East NP: plastering entrance 5.11.86, C1 20.11, C2 23.11, C3 25.11, C2 8.12, C1 14.12, hatched 16.12, 1 nestling 22.12. Uaso Nyiro River, Samburu GR: 3 x pair feeding nestling(s), more than 1 nestling in at least 2 nests; pair feeding 1 fledgling 25.7.89.

Tockus nasutus **Grey Hornbill.** Voi river, Tsavo East NP: C1 4.11.86, C2 6–8.11, C3 9.11, C4 12.11, 1 small nestling + C3 30.11, 2 nestlings + C2 4.12, 3 nestlings + C3 5.12, 4 nestlings 6.12, 14.12, smallest chick dead in nest 22.1.87; C1 8.11.86, C2 10.11, C3 11.11, nest flooded and abandoned 4.12.

CAPITONIDAE BARBETS, TINKERBIRDS

Gymnobucco bonapartei **Grey-throated Barbet.** Kakamega Forest: nestling(s) begging 4.11.87.

Lybius bidentatus **Double-toothed Barbet.** Lolgorien: pair feeding at least 2 nestlings 1.10.88 (** 73B).

Lybius diadematus **Red-fronted Barbet.** Lolgorien: nest found 1.6.86, pair feeding at least 2 nestlings from 8.6, pair + 2 fledglings near nest 14.7 (**73B).

Lybius lacrymosus **Spotted-flanked Barbet.** Lolgorien: pair incubating 6.5.85, nestling(s) heard 20.5.

Lybius leucocephalus **White-headed Barbet.** Nairobi: adults attending nest 30.6–5.7.89, feeding 14.7–15.8, fledglings flew *c.* 17.8; adults excavating 1.9.89, 2 adults probably incubating 21.9, 2–3 adults incubating 22.9–23.10, adults feeding 1 nestling 12.11–17.11, 1 nestling honeyguide (*Indicator minor*?), empty nest 18.11 (fledgling flown?).

Lybius melanopterus **Brown-breasted Barbet.** Shimoni: 1 fledgling begging 9.2.85; adults excavating 9.89, pair feeding 1 young 7–8.11, pair feeding 3 young 21.11.

Pogoniulus bilineatus **Yellow-rumped Tinkerbird.** Nairobi: pair feeding large nestling 13–21.2.86, left nest 21.2 at *c.* 08:00; adult feeding 1 fledgling 18.2.87 & 3.8.88; adult + 1 fledgling 23.11.88; 3 large nestlings on ground 20.7.88, replaced + large nestling on ground from another nest, flew 21–22.7, pair feeding 4 fledglings; pair feeding 1 fledgling 18.2.87. Diani: adult feeding 1 fledgling 17.4.85. Kampala (U): pair feeding at least 1 large nestling 6.88.

Pogoniulus leucomystax **Moustached Green Tinkerbird.** Nairobi: adult + 1 fledgling 10.8.88, 3.9.

Pogoniulus pusillus **Red-fronted Tinkerbird.** Diani: nest hole occupied 4.10.86, feeding 14–17.10.

INDICATORIDAE HONEYGUIDES

Indicator indicator **Greater Honeyguide.** Nairobi: pair Scimitarbills *Phoeniculus cyanomelas* feeding 1 fledgling 16.7.86.

Indicator minor **Lesser Honeyguide.** Nairobi: 1 fledgling, probably this species, in nest of White-headed Barbet *Lybius leucocephalus* 18.11.89 (see above).

Indicator variegatus **Scaly-throated Honeyguide.** Ngobit: hosts Nubian Woodpecker *Campethera nubica*, adults feeding 14–15.5.89, 1 fledgling flew 16.5, female feeding 1 fledgling 17–20.5 (**62B).

PICIDAE WOODPECKERS

Campethera nubica **Nubian Woodpecker.** El Karama Ranch, Laikipia: female feeding 1 fledgling 31.8.85, 6.9. Ngobit: see previous species (** 62B).

Dendropicos fuscescens **Cardinal Woodpecker.** Ngorongoro CA (T): pair feeding nestling(s) 30.12.86.

Picoides obsoletus **Brown-backed Woodpecker.** Nairobi: male feeding 1 fledgling 6.12.88. *Very few breeding records.*

Mesopicos goertae **Grey Woodpecker.** L. Naivasha: pair incubating 15.7.89.

ALAUDIDAE LARKS

Calandrella cinerea **Red-capped Lark.** Serengeti NP (T): C1 + 1 small nestling 3.3.87; adult feeding 1 fledgling 17.3.87. Mathatani Ranch, Machakos: adult feeding fledglings 21.7.86.

Mirafra africanoides **Fawn-coloured Lark.** Olorgesailie: 1 fledgling begging from adult 19.6.86. L. Magadi: adult incubating C2 22.7.89. (**75C.)

HIRUNDINIDAE SWALLOWS

Hirundo abyssinica **Striped Swallow.** Nairobi: adult feeding at least 3 fledglings in mid-air 18.2.87; adult feeding 2 fledglings 27.7.88; nest begun 7.1.89, complete 3.2, 3 fledglings 21.3 (2 left nest), young still sheltering in nest 28.4; adults building 18.3.89, 3 fledglings left nest 8.6.89. L. Mburo NP (U): C 28.4.85.

Hirundo daurica **Red-rumped Swallow.** Olorgesailie: adult feeding 1 fledgling 13.6.86 (**75C). Nairobi: 2 fledglings left nest 7.7.89. Kitengela: pair in and out nest, 13.7.89 (*75D).

Hirundo fuligula **African Rock Martin.** Nairobi: nest complete 15.9.88, incubating 24.9, 20.10, feeding 2 nestlings 6.11, 2 large nestlings 12.11, 13.11, 2 nestlings very active 18:00 15.11, empty nest 16.11 08:00; same nest, 3 nestlings 13.6.89, 3 large nestlings 27.6–4.7, empty nest 6.7 (left nest). Olorgesailie: empty nest 27.4.86, 5.5, C2 7.5, adult incubating C3 10.5, 11.5, empty nest 13.5.

Hirundo smithii **Wire-tailed Swallow.** Mweya, Queen Elizabeth NP (U): C3 23.5.86. Serengeti NP (T): lining nest 13.1.87, C1 19.1; pair feeding 3 large nestlings 5.5.87; 3 large nestlings 2.7.87, killed by ants. Ewaso Ngiro River, Nguruman Escarpment: adults feeding fledglings, 30.7.89 (**75C).

Psalidoprocne pristoptera **Black Roughwing.** Nairobi: adult entering nest hole and removing faecal sac 19.7.89.

DICRURIDAE DRONGOS

Dicrurus adsimilis **Drongo.** Diani: nest begun 7.10.88, adult incubating 18.10.

CORVIDAE CROWS

Corvus capensis **Cape Rook.** Serengeti NP (T): incubating 11.5.87.

Corvus rhipidurus **Fan-tailed Raven.** Kora Inselberg, Kora NR: pair + 2 fledglings 25.1, + F4 26.1.

PARIDAE TITS

Parus albiventris **White-bellied Tit.** Limuru: adults feeding 1–2 fledglings 29.1.86. Nairobi: adult feeding 1 fledgling 13.7.88.

Parus fringillinus **Red-throated Tit.** Serengeti NP (T): female building 14–18.1.87, 4 adults + 1 fledgling 5.2.

Parus leucomelas **Black Tit.** L. Mburo NP (U): 2 nestlings 23.11.86.

TIMALIIDAE BABBLERS

Turdoides hindei **Hinde's Pied Babbler.** Tana River bridge (Embu District): pair feeding 2 young 1.8.89 ([**]63C).

Turdoides rubiginosus **Rufous Chatterer.** Samburu NP: adult feeding 1 fledgling 31.7.89 (**51B).

PYCNONOTIDAE BULBULS

Andropadus gracilirostris **Slender-billed Greenbul.** Nairobi: adult feeding 1–2 fledglings.

Pycnonotus barbatus **Yellow-vented Bulbul.** Nairobi: adult feeding 1 fledgling 5.3.86 & 24.2.87; pair feeding 2 fledglings 23.11.86; female feeding fledglings 28.8.88; C2 11.9.89, adult incubating 16.9, 19.9, 1 nestling 21.9–3.10, empty nest 4.10. Kakamega NR: 2 small nestlings 8.4.89, 2 large nestlings 15.4, first nestling left nest 16.4, second left 17.4, adults + 1 fledgling 26.4. Makerere, Kampala (U): pair feeding 1 fledgling 23.10.86. Serengeti NP (T): adults feeding 1 fledgling 29.7.86.

TURDIDAE THRUSHES

Alethe poliocephala **Brown-chested Alethe.** Kieni forest: adult feeding 1 fledgling 12.1.86 (** 62D).

Cercotrichas leucophrys **White-browed Scrub Robin.** Olorgesailie: C2 8.5.86, 10.5, 2 nestlings 3–4 d 18.5.

Cichladusa guttata **Spotted Morning Thrush.** Olorgesailie: 1 nestling 26.4.85; empty nest 29.4.86, C2 4.5, empty nest 7.5; empty nest 7.5.86, C1 10.5, C2 20.5, adult incubating 29.5, 1 nestling flight feathers still in pin 2.6, 12.6 C1 old nestlings gone; 2 fledglings begging from adult 27.6.87.

Cossypha caffra **Robin Chat.** North Kinangop: 1 fledgling begging from adult 24.6.89. Nairobi: adult feeding 1 fledgling 28.10.89.

Cossypha heuglini **White-browed Robin Chat.** Nairobi: adult feeding (nest not found) 3.5.89 & 3.6.89.

Cossypha natalensis **Red-capped Robin Chat.** Lolgorien: 1 fledgling 17.7.83; 1 fledgling following pair 15.2.85.

Cossypha semirufa **Rüppell's Robin Chat.** Nairobi: 1 fledgling 14.11.86, adults feeding 30.11; 1 fledgling begging 29.12.86; adult incubating C2 7.4.88–19.4, 1 nestling 20.4, 2 nestlings 21.4–4.5, empty nest 5.5, adults + 2 fledglings 6.5; 1 fledgling 28.5.88; 1 fledgling begging 4.12.88; 1 fledgling 18.7.89; adult + 1 fledgling 3.12.89.

Myrmecocichla aethiops **Anteater Chat.** South Kinangop: adult feeding 2 fledglings ([**]62D).

Oenanthe pileata **Capped Wheatear.** Serengeti NP (T): adult feeding 2 fledglings at nest-burrow entrance.

Pogonocichla stellata **White-starred Forest Robin.** Nairobi: pair + 2 fledglings 6.3.87.

Sheppardia gunningi **East Coast Akalat.** Sokoke Forest: adult collecting nesting material 2.4.88.

Thamnolaea cinnamomeiventris **Cliff Chat.** Serengeti NP (T): female feeding 1 male fledgling.

Turdus abyssinicus **Northern Olive Thrush.** Nairobi: pair building 20–25.6.86, incubating 1–20.7, feeding 21.7, 1 fledgling 9.8, pair feeding 2 fledglings 14.8; 1 fledgling 15.2.87, adult feeding 17.2, 1 fledgling still begging 11.3; 2 fledglings begging 25.5.87; 1 fledgling begging 18.5.88; pair feeding 1 fledgling 26.6.88; adult feeding 1 fledgling 16.2–26.2.89, still following adult 5.3; 1 fledgling begging 8.7.89; adult building 5.10.89, feeding (nest unlocated) 10.11, remains of large nestling found 14.11; adults feeding 1 fledgling 4.12.89.

Turdus pelios **African Thrush.** Makerere, Kampala (U): 3 large nestlings wing-flapping 29–30.12.85, 3 fledglings left nest 31.12; incubating 14.2.86, feeding nestling(s) 23.2, 2 fledglings 4.3; pair feeding 2 nestlings 25.10.86.

SYLVIIDAE WARBLERS

Apalis cinerea **Grey Apalis.** Nairobi: pair feeding 2 fledglings 17.6.89.

Apalis flavida **Yellow-breasted Apalis.** Nairobi: pair feeding 2 newly hatched young 21.6.87.

Camaroptera brachyura **Grey-backed Camaroptera.** Lolgorien: building 18.4.88, C2 2.5, incubating 8.5, both eggs hatched 10.5, empty nest 14.5 (** 73B). Serengeti NP (T): 3 large nestlings 10.3.87.

Chloropeta natalensis **Yellow Warbler.** Nairobi: adult feeding 1 fledgling 8.3.87.

Cisticola chubbi **Chubb's Cisticola.** Kakamega Forest: C2 22.12.87, eggs cracked and nest invaded by ants 24.12.

Cisticola cinereola **Ashy Cisticola.** Olorgesailie: C4 21.4.87, 26.4.

Phyllolais pulchella **Buff-bellied Warbler.** L. Baringo: pair + 3 fledglings 30.12.88.

Prinia subflava **Tawny-flanked Prinia.** Lolgorien: C3 11.1.87, later adults seen feeding (**73B). Kakamega NR: C4 23.5.89, 25.5, empty nest 31.5. Nairobi: pair feeding 3 fledglings 7.6.89.

Schoenicola platyura **Fan-tailed Warbler.** Kakamega NR: 2 small nestlings 16.8.89 (**48D).

Sylvietta brachyura **Northern Crombec.** Ndara Ranch, south of Voi: adult building near-completed nest 21.10.88 (*101D).

MUSCICAPIDAE FLYCATCHERS

Bradornis microrhynchus **Grey Flycatcher.** Serengeti NP (T): pair feeding 1 fledgling 2.1.87, 4.1; 1 fledgling begging 16.3.87; adult incubating 12.1.89. Ngorongoro CA (T): adult feeding 1 fledgling 16.1.87; 1 fledgling begging 7.5.87.

Empidornis semipartitus **Silverbird.** Serengeti NP (T): 1 fledgling begging 16.1.89.

Melaenornis chocolatina **White-eyed Slaty Flycatcher.** Nairobi: adult feeding 1 fledgling 18.3.87 & 8.7.88 & 12–15.8.88; pair feeding 2 fledglings 8.6.89, 15.6. Kieni Forest: adult + 1 fledgling 28.1.90.

Melaenornis edolioides **Black Flycatcher.** Makerere, Kampala (U): 3 small nestlings 8.3.86; pair feeding nestling(s) 23.10.86.

Muscicapa adusta **Dusky Flycatcher.** Nairobi: adult feeding 2 fledglings 18.1.87; pair feeding 2 large nestlings 18.1.87. Ol Ari Nyiro, Laikipia: adult feeding 1 fledgling 15.8.89 ([**50A]).

Batis molitor **Chin-spot Batis.** Ngobit: pair feeding 1 Klaas' Cuckoo *Chrysococcyx klaas* fledgling 15–20.5.89.

Erannornis longicauda **Blue Flycatcher.** Lolgorien: adult incubating C2 18.10.87, 2 small nestlings 22.11, pair feeding 2 fledglings 10–11.12.

Terpsiphone rufiventer **Red-bellied Paradise Flycatcher.** Kibale forest (U): C3 1.4.88.

Terpsiphone viridis **Paradise Flycatcher.** Nairobi: 1 fledgling begging 20–27.2.86; adult feeding 1 fledgling 14.7.86 and 25.2.87; adult feeding 2 fledglings 14.2–1.3.87; pair building 22.4.87, copulating 29.4, incubating 1.5; pair building 20–26.12.87, female incubating 27.12, pair incubating 27.12.87–1.1.88, female feeding 13.1, 1 nestling 20.1 testing wings, empty nest 22.1 nestling taken by predator?; female incubating 18–29.4.88, pair feeding 1 fledgling 28.5–20.6, building again 20.6; pair building 18.6.88, incubating 1.7, feeding 11.7, 16.7, young left nest by 24.7, pair feeding fledglings 10–15.8; pair feeding 1 small nestling 15.5.89. Shimoni: pair building 19.11.85, incubating 30.11, empty nest 2.12; pair incubating 8.1.87; 2 nestlings 26.12.88, pair feeding 2 nestlings 28.12, empty nest 30.12. Lolgorien: C1 12.1.87, adult incubating 22.1, feeding 30.1, 1 fledgling left nest 6.2 (**73B). Kedong Valley: pair feeding 2 fledglings 4–5.4.88.

MOTACILLIDAE WAGTAILS, PIPITS, LONGCLAWS

Anthus novaeseelandiae **Richard's Pipit.** Kakamega NR: C2 24.2.88, 25.2, eventually abandoned?; C3 23.4.89 (**48D). L. Naivasha: 3 small nestlings *c.* 3 d 3.5.89.

Macronyx croceus **Yellow-throated Longclaw.** Lolgorien: C4 18.4.85, 4 nestlings 27.4, empty nest 6.5 (**73B). Kakamega NR: adult incubating C3 10.4.89 (**48D).

Motacilla aguimp **African Pied Wagtail.** Nairobi: adult feeding 1 fledgling 5.3.86; pair feeding 2 fledglings 14.6.87; feeding nestlings 9.10.88. El Karama Ranch, Laikipia: pair feeding nestlings 3.12.85, 2 fledglings left nest 6.12, pair feeding 2 fledglings 8.12. Nyeri: pair feeding 2 fledglings 12.12.89.

***Motacilla clara* Mountain Wagtail.** Nairobi: pair + 1 fledgling 1.1.87; pair feeding 2 fledglings 9.10.88; pair feeding (nest not located) 22.3.89; pair feeding 2 fledglings 13.1.89.

MALACONOTIDAE BUSH SHRIKES

***Dryoscopus cubla* Black-backed Puffback.** Lolgorien: pair feeding nestlings 15.8.8?, 2 large nestlings 23.8 (**73B).

***Laniarius ferrugineus* Tropical Boubou.** Naro Moru: pair feeding nestling(s) 4.3.87 (**63A).

***Laniarius funebris* Slate-coloured Boubou.** El Karama Ranch, Laikipia: adult feeding 1 fledgling 20.6.85.

***Malaconotus sulfureopectus* Sulphur-breasted Bush Shrike.** Koru, near Muhoroni: adult incubating 4–6.5.87 (** 61A).

***Nilaus afer* Brubru.** Ndara Ranch, near Voi: pair feeding 2 large nestlings 18.10.86, 1 nestling only 19–20.10, empty nest 20.10; incubating 2 nestlings 31.1.87. Ndutu, Ngorongoro CA (T): pair incubating 30.12.86.

LANIIDAE SHRIKES

***Lanius cabanisi* Long-tailed Fiscal.** Nairobi NP: adults feeding 1 fledgling 22.5.88; adults feeding 1 fledgling 27.8.86; adult feeding 2 fledglings 21.12.88.

***Lanius collaris* Fiscal.** Ngorongoro CA (T): adult feeding 1 fledgling 15.1.87. North Kinangop: adult feeding 2 fledglings 23.6.89.

PRIONOPIDAE HELMET SHRIKES

***Eurocephalus rueppelli* White-crowned Shrike.** Ndara Ranch, near Voi: adult incubating 18–19.10.86. Serengeti NP (T): 1 fledgling in nest 20.4.86; seven adults feeding 1 fledgling 13.1.87; adults feeding 1 fledgling 27.2.87; 1 fledgling begging 4.3.87.

***Prionops plumata* Helmet Shrike.** Kiboko: adult feeding 1 fledgling 19.9.86 (**88B).

***Prionops poliolopha* Grey-crested Helmet Shrike.** L. Nakuru NP: pair feeding 4 young 2.7.89 (**62A). *The first post-1970 breeding record and the first outside April–May.*

***Prionops retzii* Retz's Helmet Shrike.** Shimoni: 2 fledglings begging from adults (**114C). Diani: adults incubating + feeding 9.10.88, feeding 17.10, empty nest 13.10.

STURNIDAE STARLINGS

***Cinnyricinclus sharpii* Sharpe's Starling.** Lolgorien: pair inspecting nest hole 7.6.88, incubating 18.6, C3 25.6, 3 small nestlings *c.* 3 d 2.7, 3 nestlings 9.7, 3 large nestlings 23.7, empty nest 27.7, 3 fledglings + adults nearby 20.8 (**73B). Mt Elgon NP: pair + 2 fledglings 9.1.86 (**36D). *Very few breeding records.*

***Creatophora cinerea* Wattled Starling.** Serengeti NP (T): young begging 27.3.87.

***Lamprotornis corruscus* Black-breasted Glossy Starling.** Shimoni: 1 fledgling begging 7.2.85.

***Lamprotornis purpuropterus* Rüppell's Long-tailed Glossy Starling.** Makerere, Kampala (U): 1 fledgling fell from tree trying to fly 29.4.86.

***Onychognathus tenuirostris* Slender-billed Chestnut-winged Starling.** Mt Kenya moorland: pair incubating 17.6.87 (nest in cave).

***Poeoptera stuhlmanni* Stuhlmann's Starling.** Kakamega Forest: pair feeding nestlings 4.5.89.

***Spreo superbus* Superb Starling.** Serengeti NP (T): 1 fledgling by nest 21.4.86; adult

feeding fledgling 7.6.86; at least 3 adults feeding 3 nestlings 7.3.87. Samburu NP: adult feeding 1 fledgling 26.7.89.

NECTARINIIDAE SUNBIRDS

Anthreptes collaris **Collared Sunbird.** Nairobi: incubating 30.4.86; female incubating C2 6.12.87, 2 nestlings 10.12, 2 fledglings flying 17.12; adult feeding 1 fledgling 10.8.88; female building 16.10.88, eventually produced 2 fledglings. Shimoni: 2 fledglings begging 5.1.85 and 24.9.85; 1 fledgling begging 18.10.86; female incubating 20.9.87, 1 nestling 24.9, 28.9, empty nest 10.10, 1 fledgling 10.10; female incubating 16.11.88, empty nest *c.* 19.11.

Anthreptes orientalis **Eastern Violet-backed Sunbird.** Samburu GR: female feeding 1 fledgling 10.82, male nearby.

Nectarinia amethystina **Amethyst Sunbird.** Shimoni: female feeding nestlings 15.5.85, empty nest 25.5.

Nectarinia bifasciata **Little Purple-banded Sunbird.** Shimoni: 1 fledgling begging 7.1.85; female incubating 19.10.85, 23.10, 2 nestlings 3.12, flown by 7.12, 2 fledglings 10.12; 1 fledgling begging from male 20.9.87 (**114C).

Nectarinia bouvieri **Orange-throated Sunbird.** Kakamega Forest: female incubating C2 2.11.87 (**48D). *The first confirmed breeding record for Kenya (and the first nest record card in the collection).*

Nectarinia chloropygia **Olive-bellied Sunbird.** Kampala (U): adult incubating or feeding 10.4.86.

Nectarinia kilimensis **Bronze Sunbird.** Nairobi: pair feeding 1 Klaas' Cuckoo *Chrysococcyx klaas* fledgling 29.10.88. Limuru: female feeding 1 fledgling 10.12.89.

Nectarinia mediocris **Eastern Double-collared Sunbird.** Aberdares NP: female entering complete lined nest, no eggs 29.12.89.

Nectarinia olivacea **Olive Sunbird.** Shimoni: 1 fledgling begging 27.9.85.

Nectarinia preussi **Northern Double-collared Sunbird.** Nairobi: adult feeding 1 fledgling 6.12.88.

Nectarinia pulchella **Beautiful Sunbird.** Olorgesailie: C1 2.6.85; empty nest 31.5.86, female incubating C3 11.6; C2 15.6.86; empty nest 15.6.86, C2 20.6; 1 small nestling 18.7.86; C2 5.6.87.

Nectarinia senegalensis **Scarlet-chested Sunbird.** Olorgesailie: 1 small nestling 16.3.85; C2 26.4.85 ([**]75C). L. Naivasha: female incubating, nest 1 week old 16.10.82. Serengeti NP (T): female lining nest 16.4.87, empty nest 20.4, C2 22.4, destroyed by baboons 24.4.

Nectarinia venusta **Variable Sunbird.** Olorgesailie: C2 5.6.87. Nairobi: pair feeding 2 nestlings 15.7.87; pair building 28.1.89, female incubating 2–18.2, male feeding + female incubating nestlings then later pair feeding 18–23.2, male feeding 2 fledglings both flying 9.3, pair still feeding 2 fledglings 18.3.

Nectarinia veroxii **Mouse-coloured Sunbird.** Shimoni: C2 30.4.85, feeding 2 nestlings 10.5, feeding 1 nestling 12.5, empty nest 15.5; 2 fledglings begging 26.9.85; C2 19.11.85, smashed when nest blown down 30.11; 2 large nestlings 28.9.87, empty nest 2.10, fledglings heard 2.10; 2 small nestlings 24.9.87, 2 nestlings 28.9, empty nest 7.10, fledglings heard 7.10.

ZOSTEROPIDAE WHITE-EYES

Zosterops poliogastra **Montane White-eye.** Nairobi: adults building 12.5.87, incubating 22.5, pair feeding large nestling 29–30.5, pair feeding 1 fledgling on ground and in tree 1–2.6; 1 fledgling begging 25.11.88. Chania River, Aberdares NP: 2 very small nestlings 1–2 d 29.12.89 (**62B).

Zosterops senegalensis **Yellow White-eye.** Makerere, Kampala (U): incubating 28.11.86, 1 fledgling fell from nest 10.12. Lolgorien: C2 7.6.88, incubating C2 9.6, empty nest 11.6.

PLOCEIDAE WEAVERS, ETC.

Amblyospiza albifrons **Grosbeak Weaver.** Nairobi: female feeding 2 fledglings 18.2.87.

Euplectes capensis **Yellow Bishop.** Lolgorien: C3 19.1.87, 3 small nestlings 23.1, empty nest 4.2.

Euplectes macrourus **Yellow-mantled Widowbird.** Kakamega NR: 1 nestling 14.7–23.7.88 (ringed), gone 26.7; 1 nestling 17.7–23.7.88 (ringed), gone 26.7; C2 11.8.88, 14.8; C2 14.8.88; C2 21.5.89, 2 nestlings 23.5, 1 nestling 28.5, ringed 4.6; C2 31.5.89, 4.6, 2 small nestlings 12.6; C1 31.5.89, 2.6, empty nest 10.6; C2 12.6.89, 15.6, 2 nestlings 22.6, empty nest 29.6; large nestling ringed 15.6.89; 2 small nestlings 16.6.89, 2 nestlings 22.6, 24.6, 2 large nestlings 28.6, 1 nestling ringed 29.6; C3 23.6.89, empty nest 3.7; 2 small nestlings 23.6.89, 24.6, 2 large nestlings ringed 29.6; C2 24.6.89, 2 nestlings 28.6, 29.6; C1 29.6.89, C2 26.6, empty nest 6.8; C1 24.6.89, 19.9 (abandoned); 3 x C2 26.6.89; C2 27.6.89; C2 28.6.89, empty nest 4.7; C1 3.8.89, destroyed by cattle 15.9; C1 5.9.89, C2 dry and empty 15.9; C2 8.9.89, empty nest 15.9.

Euplectes progne **Long-tailed Widowbird.** North Kinangop: C2 and 2 large nestlings 27.5.89 (** 62C).

Ploceus baglafecht **Baglafecht Weaver.** El Karama Ranch, Laikipia: adults + 2 fledglings 2.7.85. Nairobi: adult feeding 1 fledgling 28.1.86 and 21.2.86; pair feeding 2 fledglings 21.8.86 and 12.86; male feeding 1 fledgling 24.11.86, feeding 2 fledglings 30.11; 2 fledglings begging 30.6.88 & 4.12.88. Kakamega: female feeding 1 fledgling 30.5.89, another fledgling nearby.

Ploceus bicolor **Dark-backed Weaver.** Kakamega Forest: pair feeding nestlings 4.5.89.

Ploceus heuglini **Heuglin's Masked Weaver.** Kiminini (south of Kitale): colony of at least 20 birds (*48B).

Ploceus intermedius **Masked Weaver.** Olorgesailie: C1 5.5.86, C4 7.5, C5 9.5, C3 15.5, 17.5, 3 nestlings 20.5, 1 nestling Didric Cuckoo *Chrysococcyx caprius* 22.5 (see *C. caprius* above); C3 5–17.5.86, empty nest 20.5; C3 5–9.5.86, 2 small nestlings + C1 15.5, 3 nestlings 17–20.5, 3 nestlings, weights 13.7 g, 17.4 g, 19.5 g 22.5; empty nest unlined 5.5.86, C1 7.5, empty nest 9.5; empty nest unlined 5.5.86, C2 7–9.5, C3 15.5, C2 17.5, 1 nestling 20.5, 1 nestling Didric Cuckoo *Chrysococcyx caprius* 22.5 (see *C. caprius* above); C3 15–20.5.86, female feeding 3 nestlings 3–4 d 29.5 morning, nestlings dead in nest afternoon.

Ploceus spekei **Speke's Weaver.** Arusha (T): colony, 12/72 nests occupied 8.3.89.

Ploceus subaureus **Golden Weaver.** Hunter's Lodge, Kiboko: 2 nestlings 30.1–1.2.87.

Ploceus velatus **Vitelline Masked Weaver.** Olorgesailie: C2 23.5–31.5.86, 1 nestling + C1 11.6; empty nest 23.5.86, C3 31.5, 3 nestlings 11.6, 2 large nestlings ringed 16.6; C1 28.5.86, C2 29.5–2.6.86, 1 small nestling *c.* 4 d + C1 11.6; C2 27.5.86, C3 29.5, 2 nestlings 12.6; empty nest 19–23.5, C3 31.5–16.6; C1 19.5.86, C4 23.5, C2 + 1 small

nestling (new-hatched) 31.5, 3 large nestlings ringed 11.6; C3 19–23.5.86, empty nest 31.5; C1 6–21.5.86, nest gone 2.6; 5/8 nests along 1.6-km gully occupied 11.4.89.

Quelea cardinalis **Cardinal Quelea.** Olorgesailie: C2 11–15.6.86; C1 29.5.86 & 4.6.86 & 31.5–14.6.86; C2 25.5.86, C3 26–28.5; C3 25.5–2.6.86, 3 small nestlings 8.6, 3 nestlings 11–15.6, empty nest 19.6; male feeding 1 fledgling + 2 fledglings begging 2.7.86; C1 30.5.86, female incubating C1 2.6, 1 small nestling 1–2 d 8.6, 1 small nestling 11.6, empty nest 12.6.

Dinemellia dinemelli **White-headed Buffalo Weaver.** Serengeti NP (T): 1 nestling + C1 20.4.86.

Plocepasser mahali **White-browed Sparrow Weaver.** Ulukenya (Hopcraft Ranch): pair feeding nestlings 6.9.87.

Passer eminibey **Chestnut Sparrow.** Olorgesailie: 3–4 nestlings *c.* 4 d 12.6.87, empty nest 20.6; pair incubating C3 12.6.87.

Passer griseus **Grey-headed Sparrow.** Kampala (U): feeding nestlings 3–4.6.84 in nest of Striped Swallow *Hirundo abyssinica.*

Passer motitensis **Rufous Sparrow.** Nairobi: pair feeding 2 fledglings 20.8.86; pair feeding nestlings 29.7.87 & 7.8.87. Hell's Gate, Naivasha: pair feeding 1 fledgling 1.1.89. North Kinangop: pair feeding 2 fledglings 1.7.89. Ngorongoro CA (T): 3 fledglings begging from male 16.1.87. Serengeti NP (T): pair feeding 1 Didric Cuckoo *Chrysococcyx caprius* fledgling 15.3.87.

Petronia pyrgita **Yellow-spotted Petronia.** Ndara Ranch, south of Voi: adult feeding 1 fledgling 31.1.87.

Hypochera chalybeata **Red-billed Firefinch Indigobird.** Nairobi: 1 fledgling + 3 Red-billed Firefinches *Lagonosticta senegala* fledglings + pair 29.6.88; 1 fledgling + *L. senegala* fledglings + adults, begging from adults 5.7.89.

Vidua macroura **Pin-tailed Whydah.** Nairobi: 1 fledgling feeding with Bronze Mannikins *Lonchura cucullata* 7.8.89. Kakamega NR: 2 fledglings begging from Waxbill *Estrilda astrild.*

ESTRILDIDAE WAXBILLS, ETC.

Amandava subflava **Zebra Waxbill.** Nairobi: at least 3 fledglings + adults 6.7.88.

Estrilda astrild **Common Waxbill.** Nairobi: adults feeding at least 3 fledglings 6.7.88; fledglings begging 9.7.89.

Estrilda rhodopyga **Crimson-rumped Waxbill.** Olorgesailie: 7 fledglings begging from 3 adults 17.7.86. Nairobi: fledglings begging 9.7.89.

Lagonosticta senegala **Red-billed Firefinch.** Nairobi: 2 fledglings begging from pair 28.1.86 and 19.2.87; 3 fledglings + pair + 1 fledgling Red-billed Firefinch Indigobird *Hypochera chalybeata* 29.6.88; 3 fledglings + begging from pair 29.7.88; fledglings + 1 fledgling *H. chalybeata* begging from adults 5.7.89.

Pytilia melba **Green-winged Pytilia.** Serengeti NP (T): female feeding 3 fledglings 10.3.87. L. Mburo NP (U): C2 23.11.88.

Uraeginthus ianthinogaster **Purple Grenadier.** Near Mbagathi River, Nairobi: pair feeding 4 fledglings 10.7.88. Hell's Gate, Naivasha: pair feeding 1 fledgling 1.7.89.

Amadina fasciata **Cut-throat.** Olorgesailie: 2 nestlings in old nest of Grey-capped Social Weaver *Pseudonigrita arnaudi* 9–15.4.87, 2 nestlings ringed 16.4; 2 nestlings and C4 in old nest of *P. arnaudi* 22.6.87, nest fell.

Lonchura bicolor **Black and White Mannikin.** Nairobi: adults feeding fledglings 5.7.89.

Lonchura cucullata **Bronze Mannikin.** Nairobi: at least 3 fledglings begging 23.2.86 & early 2.87 & 4.3.87; 2 pairs + 5–6 fledglings 3–18.2.87.

FRINGILLIDAE BUNTINGS, CANARIES, SEED-EATERS

Serinus atrogularis **Yellow-rumped Seed-eater.** Nairobi: pair feeding 2 fledglings 9.7.89.

Serinus burtoni **Thick-billed Seed-eater.** Lolgorien: pair incubating 22–30.11.88, nest robbed 3.11.

Serinus citrinelloides **African Citril.** Nairobi: adult feeding 2 fledglings 18.2.87.

Serinus dorsostriatus **White-bellied Canary.** Olorgesailie: adult feeding nestlings 10.6.86, incubating 12.6; C2 23.6.86, adult incubating C3 3.7.86; 1 fledgling begging from female 17.7.86. Ngorongoro CA (T): male incubating C4 16.1.87.

Serinus reichardi **Stripe-breasted Seed-eater.** Kongelai Escarpment: pair + half-built nest 21.9.89 (*37C).

Serinus sulphuratus **Brimstone Canary.** North Kinangop: 1 fledgling begging from adult 18.6.89.

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Ringing and migration at Ngulia, Tsavo, 1989–90 autumn

G.C. Backhurst and D.J. Pearson

This, the 21st autumn season at Ngulia, was notable for the large numbers of overseas ringers taking part. The number of Palaearctic migrants ringed—7586—was the fourth highest ever. Fifty-three Afrotropical species totalling 244 individuals were also ringed. Three foreign-ringed Marsh Warbler[1] controls were unprecedented.

The lodge was manned first from 28 October to 10 November, but misty conditions at night were scarce and netting was only possible on five nights resulting in only 58 Palaearctics ringed.

The main period, 25 November to 9 December, covered the peak of the migration but again, mist was often absent at night and very few birds were caught on eight of them. The remaining seven nights were misty and accounted for 6744 migrants ringed—89 per cent of the overall total.

For the first time for a number of years, we were able to give some cover after Christmas: from 29 December to 7 January 1990. Conditions were mainly wet with good mist although on some nights very few birds were seen or caught, suggesting that the migration had tailed off.

The season was unusual in that the Whitethroat was the most caught species, followed by the Sprosser, with the Marsh Warbler, usually the top species, in third place. Numbers of 'minor' species were generally low, especially so for Eurasian Swallow and Sedge Warbler (both nil ringed), Eurasian Nightjar (5), Rufous Bush Chat (6), Basra Reed Warbler (25), the three grey *Hippolais* species—Upcher's (6), Olive-tree (7), and Olivaceous Warblers (11), Red-backed Shrike (26) and Red-tailed Shrike (15). Unusual species were, on the other hand, well represented: the eighth ever Corncrake on 6 January, an Asian Lesser Cuckoo (2nd) on 7 December, an Icterine Warbler (5th) on 22 November, and a Wood Warbler (4th) on 7 December. Three Golden Orioles ringed was also well above average. Amongst Afrotropical species, were the first Levaillant's Cuckoo *Clamator levaillantii* on 7 January and the first *Turdus* species, a Bare-eyed Thrush *T. tephronotus*, on 22 November; both these birds were caught in the bush during the day.

The season was notable in demonstrating, with the aid of a good team of experienced ringers, what a superb site Ngulia is for catching and ringing large numbers of birds (given the right weather and moon conditions). On 28 November no less than 1868 migrants were ringed—an Ngulia record—1551 at night and 317 in the bush after dawn. Two days later, the 583 migrants caught and ringed in the bush was the highest day-time catch ever.

Only two foreign-ringed birds had ever been controlled at Ngulia before this season—both Marsh Warblers from Czechoslovakia in 1979. This year (1989) three Marsh Warblers carrying Brussels rings were caught; two had been ringed in Belgium on autumn passage in late July and early August the same year and the other had been ringed on passage in early August the year before. More Marsh Warblers are ringed in Belgium than in any other country, most being lured down with taped calls. One December 1986 Ngulia-ringed Marsh Warbler was controlled in Belgium in early August 1987. The 1989–90 Ngulia ringing has so far resulted in two recoveries: a Sprosser to Lebanon (April 1990) and a Marsh Warbler to Zimbabwe (December 1990).

[1]Scientific names of Palaearctic birds are given in Table 1

There was only one Palaearctic retrap from an earlier season: a Red-tailed Shrike ringed on 24 November 1986 was caught again at Ngulia on 30 November and 29 December. The rather desultory ringing of Afrotropical birds which has occurred at Ngulia provided an interesting longevity record: a female Black-backed Puffback *Dryoscopus cubla* ringed as an adult on 2 December 1978 was retrapped on 26 November this year, almost 11 years later.

Acknowledgements

We are most grateful to the Warden of Tsavo National Park (West) for allowing us to ring birds at Ngulia. We also thank the management and staff of the Lodge and African Tours and Hotels Ltd for assistance with accommodation. This year the Ngulia Ringing Group comprised, in addition to the authors, Miles Coverdale, Brian Finch, Anna Forbes-Watson, Dennis Hasselquist, Anders Hedenström, Norbert Kempf, Jerry Lewis, Åke Lindström, Bernd Mlody, Tony Potterton, Kath Shurcliff, Mary and Keith Sinclair, Don Turner, and Stephanie, Lindsay and Rob Tyler. Thanks too for help go to Tor, Sue, Andrew and Jan Allan, Hans Beste, Lasse Laine, Charles and Irm Newton, Clare, Kathryn and Maggie Pearson, Peter Roberts, Steve Rook, Stephen Rumsey, and Tim Sharrock.

Table 1. *Numbers of Palaearctic night migrants ringed at Ngulia Safari Lodge between October and February in the years 1969–1990*

Species	1989/90 total	%†	Total 1969–1990
Corncrake *Crex crex*	1	—	8
Asian Lesser Cuckoo *Cuculus poliocephalus*	1	—	2
Eurasian Nightjar *Caprimulgus europaeus*	5	33	263
Eurasian Roller *Coracias garrulus*	5	185	53
Golden Oriole *Oriolus oriolus*	3	364	18
Rufous Bush Chat *Cercotrichas galactotes*	6	12	888
Irania *Irania gutturalis*	46	47	1704
Sprosser *Luscinia luscinia*	2473	239	20135
Nightingale *L. megarhynchos*	39	118	603
Rock Thrush *Monticola saxatilis*	24	324	150
Isabelline Wheatear *Oenanthe isabellina*	6	121	90
Northern Wheatear *O. oenanthe*	16	241	129
Pied Wheatear *O. pleschanka*	3	102	53
Great Reed Warbler *Acrocephalus arundinaceus*	2	97	37
Basra Reed Warbler *A. griseldis*	25	56	793
Marsh Warbler *A. palustris*	1993	102	35339
Reed Warbler *A. scirpaceus*	1	24	72
Icterine Warbler *Hippolais icterina*	1	—	5
Upcher's Warbler *H. languida*	6	31	334
Olive-tree Warbler *H. olivetorum*	7	37	333

Species	1989/90 total	%†	Total 1969–1990
Olivaceous Warbler *H. pallida*	11	47	409
River Warbler *Locustella fluviatilis*	125	69	3252
Wood Warbler *Phylloscopus sibilatrix*	1	—	4
Willow Warbler *P. trochilus*	95	106	1626
Blackcap *Sylvia atricapilla*	7	225	60
Garden Warbler *S. borin*	57	181	597
Whitethroat *S. communis*	2543	169	28188
Barred Warbler *S. nisoria*	17	47	633
Spotted Flycatcher *Muscicapa striata*	21	50	740
Tree Pipit *Anthus trivialis*	4	296	27
Red-backed Shrike *Lanius collurio*	26	51	902
Red-tailed Shrike *L. isabellinus*	15	34	763
Hybrid *L. collurio* x *L. isabellinus*	1	—	11
Number of species	32		32
Total ringed	7586		98221

† The autumn 1989–90 total expressed as a percentage of the mean of the 17 years 1972–1973 to 1987–1990 for each species.

Footnote to Table 1

Totals of Palaearctic species ringed in previous autumn seasons but not in 1989–90 are as follows:

Little Bittern *Ixobrychus m. minutus* 4, Night Heron *Nycticorax nycticorax* 1, Eleonora's Falcon *Falco eleonorae* 1, Spotted Crake *Porzana porzana* 1, Great Snipe *Gallinago media* 1, Eurasian Cuckoo *Cuculus canorus* 2, Eurasian Scops Owl *Otus scops* 5, Eurasian Swallow *Hirundo rustica* 146, Sand Martin *Riparia riparia* 6, Redstart *Phoenicurus phoenicurus* 3, Whinchat *Saxicola rubetra* 3, Sedge Warbler *Acrocephalus schoenobaenus* 86, Savi's Warbler *Locustella luscinioides* 2, Chiffchaff *Phylloscopus collybita* 1, Red-throated Pipit *Anthus cervinus* 1, Yellow Wagtail *Motacilla flava* 3.

From December 1969 a total of 98 487 Palaearctic night-migrating birds of 48 species (plus one hybrid) has been ringed at Ngulia during southward passage between October and February inclusive.

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Volume 13: Index to authors

Index to scientific names

Index prepared by John Fanshawe, Anna Forbes-Watson and Graeme Backhurst

comma, not '23rd']; **names of birds:** Cape Rook *Corvus capensis* [no comma, no parentheses]; in the **list of references** at the end of a paper or short communication: **names of journals:** to be given in full; **books:** after author(s) and title give the town followed by the publisher.

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Contents

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Continued inside back cover

Inferences of breeding patterns from moult data of lovebirds *Agapornis* spp. at Lake Naivasha, Kenya

J. J. Thompson

Since the introduction of hybrid lovebirds to Lake Naivasha in the 1960s, these birds have spread to encircle the lake, their numbers increasing to more than 6000 by 1986 (Thompson 1989). During mark-recapture studies, the opportunity was taken to study their moult patterns over 12 months of fieldwork. At Naivasha, lovebird nests are usually placed high up in *Acaćia xanthophloea* trees and constructed with long entrance tunnels making nest inspection difficult. Instead, moult data were used to examine breeding seasons indirectly since feather renewal is closely linked with breeding in parrots (Forshaw 1981).

Methods

Study Area

Lake Naivasha lies in the Kenyan Rift Valley between latitudes 0°50S and 0°40S and longitudes 36°15E and 36°25E. The lake has a circumference of approximately 75 km with a warm and semi-arid climate and an average annual rainfall of 627 mm. Although rainfall is unpredictable, the general pattern is of relatively heavy rains in April–May with lighter falls in other months. Surrounding the lake is a belt of forest composed almost entirely of acacia trees *Acacia xanthophloea* combined or interspersed with areas of irrigated cultivation or grassland for intensive livestock management.

Moult Scoring

The moult status of each wing was scored separately by assigning a numerical value to each primary feather according to the internationally accepted 0–5 scale (Ginn & Melville 1983). A zero was assigned to an old feather, "1" a missing feather or emergent pin, "2" a feather one-third grown, "3" two-thirds grown, "4" three-quarters grown and "5" a nearly complete or completely grown feather. In cases where the moult score differed between wings, the average of the two scores was used for moult rate calculations. By using the calculated average moult rate, the date of moult initiation in moulting birds was determined and therefore the theoretical date of breeding cessation.

Primary moult was considered as interrupted if all feathers were fully grown and no basal sheath was present on newly grown feathers. While moult interruption appears to occur for a variety of reasons in different species, it is usually associated either with breeding or migration (Harper 1984). This is generally thought to be due to the metabolic incompatibility of these processes so that they are programmed to occur at different times (Foster 1975, Payne 1969, Jones 1978, Miller 1961). Since lovebirds are not migratory, interruption of their moult is interpreted here as an indication of breeding activity.

Results

Moult pattern

Lovebirds, like all parrots, renew their primaries from the centre outwards, usually beginning at the sixth primary. Taking the moult of both wings separately, out of 102 cases where initiation of primary moult could be observed, 0.9 per cent, 15.6 per cent, 82.3 per cent and 0.9 per cent of the birds began their moult at the fourth, fifth, sixth and seventh

primaries, respectively. The usual pattern was then to drop feathers progressively on either side of the moult focus (Payne 1972) finishing by regrowing the inner- or outermost primary last.

Moult rate

Five lovebirds were recaptured 4, 10, 16, 17 and 192 days after being ringed and their moult scores had progressed by 1.5, 1, 4, 4 and 24 points respectively. This gives an average moult point with a standard deviation of 3.1 days per point. It is assumed that the relationship between the increase in moult score with time is linear so that on average the primary moult takes 290 days (5.8 x 50) for completion. The 95 per cent confidence limits for moult rate (using the appropriate statistics, d.f. = 4) is given by 5.8 + 3.9 days per point or between 95 and 485 days for a complete moult cycle.

Breeding

Over the study period, a total of 164 moulting lovebirds were captured. Numbers caught and percentages of moulting birds in total monthly samples are presented in Table 1. Using the calculated average moult rate, the numbers of birds initiating their moult (and hence ceasing breeding) in each month are presented in Fig. 1a. An adjustment to this histogram is necessary, however, because birds initiating their moult in some months had a longer period of time over which they might have been caught than others. For example, birds initiating their moult in June 1986 had available only one month over which they could have been caught, whereas those initiating in May 1986 had two months. Since the average time to complete a moult cycle is 290 days (roughly ten months) the longest period of time available to capture while moulting is ten months. This would have corresponded to birds initiating their moult in August and September 1985 except that no collections were made in January 1986. Therefore, these August and September birds only had nine months available for capture instead of ten. The correction factor was derived from the number of months available for capture and the lower histogram generated by

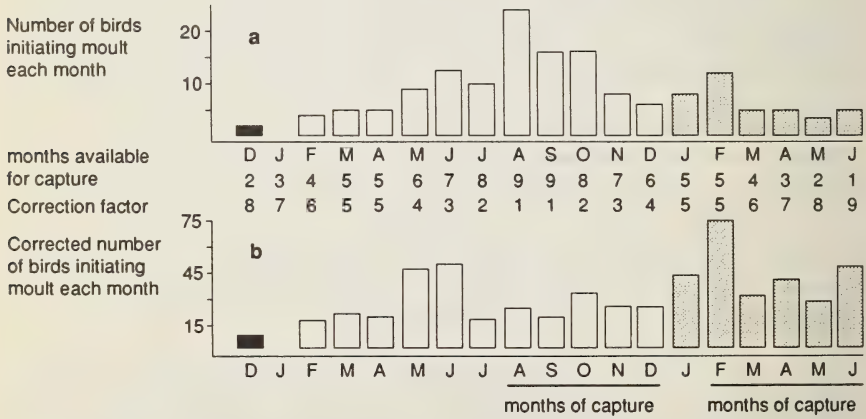

Fig. 1. *The use of primary moult to detect any breeding seasonality. The lower histogram (b) gives the derived number of sampled birds in each month initiating their moult and hence their cessation of breeding. Black is 1984, white 1985, grey 1986.*

the multiplication of each month in Fig. 1a by its correction factor. For example, the number of birds initiating their moult in August and September 1985 was multiplied by a factor of one, those in July and October by two, and so on. The resulting histogram (Fig. 1b) gives an unbiased estimate of the proportion of lovebirds ceasing to breed in each month, as derived from moult data.

A runs test showed that the initiation of moult in captured lovebirds was not randomly distributed ($P < 0.05$ one-tailed test) with time, but was concentrated towards the latter half of the study period. The percentages of captured lovebirds with interrupted moult in each month are presented in Table 1. A runs test showed that the percentage of lovebirds with interrupted moult did vary randomly throughout the study period.

Table 1. *Monthly moult data for lovebirds caught over the study period*

Month	Number caught	Percentage moulting	Percentage with interrupted moult
August	58	16	1.7
September	94	14	1.0
October	109	28	2.8
November	120	37	3.3
December	31	13	0
January*	–	–	–
February	64	41	6.3
March	57	40	1.8
April	46	39	3.1
May	19	26	5.3
June	42	62	21.4

*No lovebirds caught in January

A correlation analysis was performed on monthly breeding and rainfall data. For this, breeding data from Fig. 1b were shifted to the left by one month since these data represent the frequencies of birds ceasing to breed in each month rather than the frequency actually breeding. Monthly rainfall was then compared with the following month's level of breeding cessation. The correlation ($r = -0.185$) was not significant at the 0.05 level of probability.

Discussion

It is a pity that so few lovebirds were recaptured at different stages of their moult since the following arguments concerning breeding seasons are based on assumptions made about moult rate of the five individuals actually recaptured. Moult rate in lovebirds (and parrots in general) may be particularly variable due to its relatively slow progress. Nevertheless, while the details of Fig. 1b may be subject to error due to the small sample size in moult rate calculations, there is little doubt that lovebirds are capable of breeding at Naivasha in any month of the year.

The cause of the significant increase in breeding activity towards the end of the study period is unknown. A longer period of study is necessary to ascertain the cause of breeding peaks since, as Fig. 1b suggests, such patterns may be dependant on factors other than regular annual events, but rather on events which may occur over a longer period of time, such as unusually high rainfall affecting food availability. The independence of breeding from regular seasonal events is further suggested by interrupted moult data since over the study period, the frequency of interrupted moult varied randomly. The lack of annual breeding peaks may be due to the agricultural nature of Naivasha's habitat since irrigation has probably caused food availability to be somewhat independent of rainfall—the most noticeable climate effect in tropical regions (Brown & Britton 1980) likely to affect breeding.

It is likely that some variation in intensity of breeding occurs around the lake according to local conditions. Rainfall at the lake tends to be extremely patchy, especially in drier years, so that marked differences in food availability within short distances are possible. Patchy irrigation also enhances locally uneven food supplies. Since lovebirds at Lake Naivasha were found to have an average home range of only 2.6 km (Thompson 1987), their breeding behaviour may be dependent on their ability to forage outside these locally abundant food patches. For example, in Panama, Kalma (1970) found quite different breeding patterns of the Rufous-collared Sparrow *Zonotrichia capensis* within a distance of only three kilometres depending on the condition and dryness of local grasslands. Since lovebirds were captured all around the lake, local variations in breeding seasonality caused by a temporally and spatially patchy food supply could explain their apparent ability to breed at any time of the year.

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Ed.

Birds of Ngwazi, Mufindi District, Tanzania

D. C. Moyer, J. C. Lovett & E. A. de Leyser

The writing of this paper was prompted by our observations of birds in late May 1989 at Lake Ngwazi and nearby habitats. Ngwazi Estate and Ngwazi Lake (8°31S, 35°10E) are in the southern highlands of Tanzania, Iringa Region, Mufindi District, at an altitude of 1830 m. Mufindi District occupies the southernmost area of the Uzungwa mountains. Past ornithological exploration of the Uzungwas has concentrated primarily on the dry scrubby forest of the plateau (Bangs & Loveridge 1933, Lynes 1934, and Ripley & Heinrich 1966, 1969). Only recently have ornithologists (Stuart *et al.* 1981, Stuart & Jensen 1981) visited the wet forests on the eastern scarp. This is the richest area in endemic bird species in the Tanganyika–Nyasa montane forest island group as defined by Moreau (1966). Uzungwa is Tanzania's largest montane area (*c.* 10 000 km^2), with peaks rising to 2800 m (Rodgers & Homewood 1982). The southern and eastern slopes facing the Indian Ocean receive the most precipitation and support rainforest with a canopy reaching 40 m in some areas (Lovett *et al.* 1988). The remaining plateau country and slopes to the north and west are drier and support extensive grassland, *Brachystegia* woodland, and occasional patches of scrubby dry forest (Stuart *et al.* 1981). Because most ornithological work in the Uzungwas has focused on forest birds, little emphasis has been placed on species of woodland and other habitats. The purpose of this paper, then, is to list some of the non-forest and forest edge bird species found on the Uzungwa Plateau and to document range extensions.

Study Site

The mean rainfall at Ngwazi is 800 mm yr^{-1} and mean temperatures range from 17–18° C in November to March, dropping to 13.5° C in June and July with occasional frosts. Lake Ngwazi, 4.5 km^2 in area, was formed by Ngwazi dam built in 1953. The water is clear and cold with a fringe of reeds along the shoreline. The stunted Miombo woodland at Ngwazi is rather depauperate in bird and plant species. A majority of bird species found here are generalists that also occur in other habitats and altitude ranges. There are also several forest-edge and thicket-dwelling bird species found at Ngwazi in patches of evergreen forest growing on termite mounds in the woodland and in riverine forest along a small stream at the outlet of Lake Ngwazi. A majority of the area of Ngwazi Estate is under cultivation or exotic plantations. The pine plantations there support few species of birds or other animals. Bushbuck *Tregalephus scriptus,* Black-faced Vervet *Cercopithecus aethiopicus,* as well as several bird species, Common Buzzard *Buteo buteo* (on migration), African Goshawk *Accipiter tachiro,* Dusky Turtle Dove *Streptopelia lugens,* and others are found in the pines. The situation is the same for Eucalyptus plantations except where indigenous vegetation has regenerated in the undergrowth or where invading Black Wattle has formed a nearly impenetrable understory.

Most bird species recorded from these exotic habitats are associated with edges and firebreaks where grassland and a few indigenous tree species can be found. Black Wattle plantations at Ngwazi have not been maintained for a number of years. Fallen trees and dense stands of young trees form a thick tangle in which a number of forest and forest-edge bird species are found. In addition, many small groves and patches of wattle have invaded areas of the grassland and lake shore and are important habitat there for species such as White-browed Robin Chat *Cossypha heuglini,* Brown-headed Apalis *Apalis alticola*, and Tropical Boubou, *Laniarius ferrugineus.*

Vegetation

The soil at Ngwazi, mostly infertile clay with stones, supports extensive montane grassland, plantations of Black Wattle *Acacia mearnsi*, Blue Gum *Eucalyptus grandis*, several species of pine *Pinus* spp., Tea *Camellia sinensis*, and Maize *Zea mays*. In addition, there is a small area of stunted Zambesian woodland with some Afromontane elements on the termite mounds and in the riverine forest (phytogeographic terminology following White (1983)). The stunted woodland has a canopy of 2–4 m and is dominated by *Brachystegia spiciformis*. Other woody plants include: *Bersama abyssinica, Brachystegia boehmii, Dioscorea quartiniana, Kotschya* spp., *Osyris lanceolata, Parinari curatellifolia, Pavetta johnstonii breviloba, Psorospermum febrifugum*, and *Uapaca kirkiana*. Herbaceous plants found in the woodland include: *Aeollanthus subacaulis, Carex nyasensis, Cyperus diffusus sylvestris, Cyperus distans, Cyperus obtusiflorus, Digitaria gasensis, Disa robusta, Eragrostis schweinfurthii, Fadogia elskensii, Fadogia triphylla, Ipomoea obscurs, Justicia diclipteroides, Justicia nuttii, Kyllinga alba, Kyllingiella micricephala, Loudentia simplex, Multidentia concrescens, Otiophora caerulea, Psychotria spithamen, Rhychelytrus merviglume, Satyrium volkensii, Setaria orthosticha, Setaria sphacelata, Spermacoce dibrachiata*, and *Trachypogon spicatus*. The evergreen forest on termite mounds within the woodland and on the surrounding grassland has has a canopy of 4–8 m (Lovett & Gereau, in press); woody plants found here include: *Apodytes dimidiata, Brysocarpus orientalis, Carissa edulis, Croton macrostachyus, Cussonia arborea, Dombeya rotundifolia, Erythrina abyssinica, Flacourtia indica, Grewia stolzii, Jasminus goetzeanum, Keetia gueinzii, Olinia rochetiana, Phytolacca dodecandra, Prunus africana, Rhiocissus tridentata, Rhus longipes, Rothmannia fischeri* and *Toddalia asiatica*. The riverine forest is dominated by *Syzigium cordatum* with a canopy height of 8–10 m; other woody plants found here include: *Albizia gummifera, Apodytes dimidiata, Maesa lanceolata, Psychotia mahonii*, and *Vepris stolzii*.

Species Accounts

The following annotated list includes records such as range extensions and additions to the Mufindi District checklist (Boswell & Beakbane, unpubl. data). Most of these species were seen at Ngwazi between 22 and 25 May 1989, observations included from other localities are indicated in the text. A more complete list of species observed at Ngwazi from 1987–1989 is given in Appendix A. This list is not exhaustive and many more species will, no doubt, be added with further field work. Names are those of Britton (1980).

Red-necked Francolin *Francolinus afer*

Two birds were seen in the grassland near the airfield at 1850 m and others were heard calling daily. Britton (1980) gave 1500 m as the upper altitude limit for this species; however, it regularly occurs up to 2000 m on the Ufipa Plateau (8°–9°S, 31°–32°E) to the west, and Baker (1981) found it at 2450 m on Mbeya Mountain (8°50S, 31°22E).

Red-chested Flufftail *Sarothrura rufa*

One bird was heard in tall, marshy grass along a stream 40 km southeast of Ngwazi at 1460 m on the road from Sawala to Lulanda (8°36S, 35°34E). This is the first reported record for Mufindi District.

Emerald-spotted Wood Dove *Turtur chalcospilos*

Two birds were seen and heard daily in the woodland near the northern end of Lake

Ngwazi at 1830 m. Britton (1980) gave 1600 m as the upper altitude limit for this species.

Mackinder's Eagle-Owl ***Bubo capensis makinderi***
A female was found dead 15 km east of Lake Ngwazi on the road from Ngwazi to Sawala (8°30S, 35°18E). This record extends the known range of this species in Tanzania 100 km to the south.

Spot-throat ***Modulatrix stictigula***
A single bird was heard in thick understory in a forest patch on Lugoda Estate (8°34S, 35°16E), 15 km east of Ngwazi at 2000 m altitude. Britton (1980) gave the upper altitude limit as 1800 m.

Grey Wren Warbler ***Camaroptera simplex***
At least one bird was seen and heard daily in mixed-species flocks in the woodland at 1830 m. This species was not listed on the Mufindi District checklist; however, Britton (1980) gave a record from Sao Hill (8°20S, 35°12E) 11 km north of Ngwazi so it has been recorded there. The upper altitude limit given by Britton (1980) is 1700 m; this must have been an oversight, however, as Sao Hill is 1880 m.

Churring Cisticola ***Cisticola njombe***
This species is common at Ngwazi at 1830 m and was observed near bushes and clumps of evergreen vegetation on termite mounds in the grassland. Britton (1980) gave the lower altitude limit for this species as 2000 m.

Fan-tailed Warbler ***Schoenicola platyura***
One bird was heard in rank grass along the shore of Lake Ngwazi. This is the first record of this species for Mufindi District.

Miombo Double-collared Sunbird ***Nectarinia manoensis***
A total of six birds was seen in mixed-species flocks in the woodland at Ngwazi gleaning insects from leaf surfaces. This record represents a considerable altitudinal range extension from the 1400 m upper limit given by Britton (1980). At Lugoda Estate (8°34S, 35°16E), 15 km to the east and 150 m higher, the Eastern Double-collared Sunbird *Nectarinia mediocris* is the common sunbird in gardens, forest edge, and wattle.

Stripe-breasted Seed-eater ***Serinus reichardi***
Small flocks of three to five individuals were seen daily in the woodland at Ngwazi at 1830 m. Britton (1980) gave the upper altitude limit for this species as 1500 m.

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Appendix 1 follows on pp. 10–13

Appendix A

Key to habitats and categories: EF patches of evergreen forest on termite mounds, RF riverine forest, BW *Brachystegia* woodland, MG montane grassland, OW open water and lake-edge habitats (lily pads and aquatic reed beds), LS lake shore (reeds, rank grass, rocky shore, and wetlands fringing Lake Ngwazi), AF aerial feeders, FO birds recorded flying over Ngwazi, and EP exotic plantations (see discussion under 'Study site').

	EF	RF	BW	MG	OW	LS	AF	FO	EP
Little Grebe *Tachybaptus ruficollis*					•				
Great Cormorant *Phalacrocorax carbo*					•				
Long-tailed Cormorant *Phalacrocorax africanus*					•	•			
Darter *Anhinga rufa*					•	•			
White Pelican *Pelecanus onocrotalus*					•			•	
Pink-backed Pelican *Pelecanus rufescens*					•				
Little Bittern *Ixobrychus minutus*						•			
Squacco Heron *Ardeola ralloides*						•			
Cattle Egret *Bubulcus ibis*				•		•			
Great White Egret *Egretta alba*						•			
Purple Heron *Ardea purpurea*						•			
Grey Heron *Ardea cinerea*						•			
Black-headed Heron *Ardea melanocephala*						•			
Hamerkop *Scopus umbretta*		•				•			
Open-billed Stork *Anastomus lamelligerus*								•	
White Stork *Ciconia ciconia*								•	
White-backed Duck *Thalassornis leuconotus*					•				
Spur-winged Goose *Plectopterus gambensis*					•				
Yellow-billed Duck *Anas undulata*					•				
Osprey *Pandion haliaetus*					•			•	
Black-shouldered Kite *Elanus caerulescens*				•					
Fish Eagle *Haliaeetus vocifer*					•			•	
Black-breasted Snake Eagle *Circaetus gallicus pectoralis*			•	•					
Pallid Harrier *Circus macrourus*				•				•	
Montagu's Harrier *Circus pygargus*				•				•	
African Marsh Harrier *Circus ranivorus*				•		•			
Marsh Harrier *Circus aeruginosus*				•		•			
African Goshawk *Accipiter tachiro*								•	•
Shikra *Accipiter badius*									•
Ovampo Sparrowhawk *Accipiter ovampensis*						•			
Lizzard Buzzard *Kaupifalco monogrammicus*								•	
Common Buzzard *Buteo buteo*				•					•
Augur Buzzard *Buteo augur*			•	•					•
Lesser Spotted Eagle *Aquila pomarina*								•	•
Tawny Eagle *Aquila rapax*								•	•
Steppe Eagle *Aquila nipalensis*			•	•					•
Long-crested Eagle *Lophaetus occipitalis*									•

	EF	RF	BW	MG	OW	LS	AF	FO	EP
Lesser Kestrel *Falco naumanni*				•				•	•
Eastern Red-footed Falcon *Falco amurensis*							•	•	
Eleonora's Falcon *Falco eleonorae*								•	•
Hobby *Falco subbuteo*				•				•	•
Red-necked Spurfowl *Froncolinus afer*		•	•					•	
Purple Gallinule *Porphyrio porphyrio*					•				
Common Moorhen *Gallinula chloropus*					•				
Red-knobbed Coot *Fulica cristata*					•				
Jacana *Actophilornis africanus*					•				
Lesser Jacana *Microparra capensis*					•				
Temminck's Courser *Cursorius temminckii*				•					
Wattled Plover *Vanellus senegallus*				•					
Crowned Plover *Vanellus coronatus*				•					
Long-toed Plover *Vanellus crassirostris*					•				
Emerald-spotted Wood Dove *Turtur chalcospilos*		•	•						
Red-eyed Dove *Streptopelia semitorquata*			•						•
Ring-necked Dove *Streptopelia capicola*			•						
Dusky Turtle Dove *Streptopelia lugens*	•		•						•
Black and White Cuckoo *Clamator jacobinus*			•						
Red-chested Cuckoo *Cuculus solitarius*									•
Klaas's Cuckoo *Chrysococcyx klaas*	•	•	•						
White-browed Coucal *Centropus superciliosus*						•			
Scops Owl *Otus scops*			•						
Common Swift *Apus apus*							•	•	
Speckled Mousebird *Colius striatus*	•	•	•						
Malachite Kingfisher *Alcedo cristata*		•			•				
Little Bee-eater *Merops pusillus*			•	•		•			
Eurasian Bee-eater *Merops apiaster*								•	
Eurasian Roller *Coracius garrulus*								•	
Lesser Honeyguide *Indicator minor*	•	•	•						
Scaly-throated Honeyguide *Indicator variegatus*			•						
Cardinal Woodpecker *Dendropicos fuscescens*	•	•	•						
Red-capped Lark *Calandrella cinerea*				•					
Flappet Lark *Mirafra rufocinnamomea*				•					
Angola Swallow *Hirundo angolensis*				•		•	•		
Blue Swallow *Hirundo atrocaerulea*				•				•	
Grey-rumped Swallow *Hirundo griseopyga*				•		•	•		
Eurasian Swallow *Hirundo rustica*				•		•	•		
Black Rough-wing *Psalidoprocne pristoptera*							•	•	
Banded Martin *Riparia cincta*				•		•	•		
African Sand Martin *Riparia paludicola*								•	
African Golden Oriole *Oriolus auratus*	•	•	•						
Black-headed Oriole *Oriolus larvatus*	•	•	•						
Pied Crow *Corvus albus*			•	•					•
Black Tit *Parus leucomelas*	•	•	•						
Black Cuckoo Shrike *Campephaga flava*	•	•	•						

	EF	RF	BW	MG	OW	LS	AF	FO	EP
Common Bulbul *Pycnonotus barbatus*	•	•	•						
White-browed Scrub Robin *Cercotrichas leucophrys*		•		•					
White-browed Robin Chat *Cossypha heuglini*	•	•							•
Stonechat *Saxicola torquata*				•		•			
Kurrichane Thrush *Turdus libonyanus*			•						
Brown-headed Apalis *Apalis alticola*	•	•							•
Grey-backed Camaroptera *Camaroptera brachyura*	•	•							•
Wing-snapping Cisticola *Cisticola ayresii*				•					
Singing Cisticola *Cisticola cantans*						•			
Black-lored Cisticola *Cisticola chubbi nigriloris*				•					
Croaking Cisticola *Cisticola natalensis*			•	•					
Churring Cisticola *Cisticola njombe*				•					
Trilling Cisticola *Cisticola woosnami*			•						
Tawny-flanked Prinia *Prinia subflava*			•	•		•			
Willow Warbler *Phylloscopus trochilus*									•
Blackcap *Sylvia atricapilla*	•	•	•						
Garden Warbler *Sylvia borin*	•	•	•						
Whitethroat *Sylvia communis*	•	•	•						
Red-faced Crombec *Sylvietta whytii*	•	•	•						
Pale Flycatcher *Bradornis pallidus*			•						
White-eyed Slaty Flycatcher *Melaenornis chocolatina*		•	•	•					
Southern Black Flycatcher *Melaenornis pammelaina*				•					
Dusky Flycatcher *Muscicapa adusta*	•	•	•						
Lead-coloured Flycatcher *Myoparus plumbeus*			•						
Chin-spot Batis *Batis molitor*			•						
Paradise Flycatcher *Terpsiphone viridis*	•	•	•						
Richard's Pipit *Anthus novaeseelandiae*				•					
Long-billed Pipit *Anthus similis*				•					
Tree Pipit *Anthus trivialis*									•
Fülleborn's Longclaw *Macronyx fuelleborni*				•					
African Pied Wagtail *Motacilla aguimp*						•			
Black-backed Puffback *Dryoscopus cubla*	•	•	•						
Tropical Boubou *Laniarius ferrugineus*	•	•							•
Brown-headed Tchagra *Tchagra australis*	•		•						
Black-headed Tchagra *Tchagra senegala*			•						
Fiscal *Lanius collaris*			•	•					
Blue-eared Glossy Starling *Lamprotornis chalybaeus*		•	•	•					
Collared Sunbird *Anthreptes collaris*	•	•							
Variable Sunbird *Nectarinia venusta*	•	•	•	•					
Green-headed Sunbird *Nectarinia verticalis*	•	•	•						
Yellow White-eye *Zosterops senegalensis*	•	•	•						
Grosbeak Weaver *Ambylospiza albifrons*		•							
Red-headed Weaver *Anaplectes rubriceps*			•						
Red-naped Widowbird *Euplectes ardens*			•	•		•			
Fan-tailed Widowbird *Euplectes axillaris*				•					
Yellow Bishop *Euplectes capensis*			•	•		•			

	EF	RF	BW	MG	OW	LS	AF	FO	EP
Marsh Widowbird *Euplectes hartlaubi*						•			
Baglafecht Weaver *Ploceus baglafecht*	•	•	•			•			
Spectacled Weaver *Ploceus ocularis*		•				•			
Holub's Golden Weaver *Ploceus xanthops*	•	•	•			•			
Southern Brown-throated Weaver *Ploceus xanthopterus*						•			
Cardinal Quelea *Quelea cardinalis*						•			
Pin-tailed Whydah *Vidua macroura*			•	•					
African Firefinch Indigobird *Hypochera funerea*				•					
Waxbill *Estrilda astrild*			•	•		•			
Yellow-bellied Waxbill *Estrilda melanotis*						•			
Fawn-breasted Waxbill *Estrilda paludicola*			•			•			
African Firefinch *Lagonosticta rubricata*	•	•	•	•					
Bronze Mannikin *Lonchura cucullata*			•	•		•			
Cabanis' Bunting *Emberiza cabanisi*			•						
Golden-breasted Bunting *Emberiza flaviventris*			•						
African Citril *Serinus citrinelloides*	•	•	•	•					
Yellow-fronted Canary *Serinus mozambicus*	•	•	•						
Brimstone Canary *Serinus sulphuratus*	•	•	•	•					

Notes on nest construction by the Indian House Crow *Corvus splendens* and other aspects of its breeding biology in Mombasa, Kenya

Colin Ryall

The Indian House Crow *Corvus splendens*, first recorded in Mombasa in 1947 (Mackworth-Praed & Grant 1960), has now proliferated to pest proportions (Ryall, in prep). As part of a programme to reduce this population, the Municipal Council mounted a campaign to destroy their eggs and chicks. Since October 1985, a team of workers from the Parks and Public Health Departments has been employed during the breeding seasons in bringing down House Crow nests, chicks present. The Kenya Society for the Protection of Animals was consulted. The exercise is carried out throughout Mombasa Island.

Though well studied in India, *C. splendens* has received little attention outside its native range. I was able to collect some data while present at the first two nest collection sessions (as an adviser on the control programme) on 18 October and 1 November 1985. Although these sessions have been continued over the subsequent years, albeit erratically, only information of a general nature could be obtained.

Breeding season

Yields of eggs and chicks from the nest collection campaign indicate a breeding season starting in mid-September with peak numbers in November and December and then tailing off slowly to May. Low numbers of eggs and chicks have been collected in May, in 1986, 1987 and 1988. There is no evidence of breeding in June to August, however.

This indicates a much broader span than the breeding seasons of October–January given by Moreau (1950) and September–January of Brown & Britton (1980), although the peak period is in close agreement.

Based on these observations, the nest collection campaign is routinely carried out between September and May.

Nest construction

House Crows in Mombasa can been seen collecting nesting material from early September, usually picking up items from the ground in parks, gardens, refuse tips, etc., but sometimes tugging twigs from trees. Nests take the form of untidy platforms of twigs and sticks of up to 30 cm in diameter sometimes containing quantities of steel wire, with a cup-like central hollow about 15 cm across which is lined with grass, hair and other soft fibrous material. The nests closely resemble those described by Lamba (1963) and Ali & Ripley (1968–74) from India. House crows do not nest far from human habitation.

The first nest collection of 18 November 1985 at Mzimle, a large area of grassy parkland with numerous trees in the less crowded periphery of Mombasa Island. Both sites are favoured for breeding by House Crows. Table 1 presents observations on nest construction made on these occasions.

There was a marked difference in the material utilized for the construction of nests at the two sites. At Makadara Park 68 of the 69 nests collected were constructed largely or entirely of steel wire and other metal objects, containing few or no twigs, but were usually lined with fine material, as described earlier. Those at Mzimle were almost entirely composed of twigs and sticks with few containing any metallic objects. Inclusion of wire

Table 1 *Mean heights and nesting material used in nests collected at Makadara Park and Mzimle, Mombasa.*

Site	No of nests collected	Mean height of nests (metres)	Nesting material
Makadara Park	69	7.3	mainly wire + few twigs or entirely wire
Mzimle	90	6.4	entirely twigs and few with wire

greatly increases the weight of nests and many from Makadara Park weighed 2 to 3 kg. One entirely metal nest of 3.5 kg from this site has been lodged with the National Museum in Nairobi. One nest was composed entirely of pieces of galvanized wire instead of the usual rusting wire. Many workers have described wire nests built by House Crows in India and in their detailed study on nidification in Bombay House Crows Altevogt & Davis (1979) described wire nests weighing up to 6 kg and a 'communal' wire nest of 25 kg in Calcutta. Such nests probably arise from repeated addition of nesting material in concurrent years as, unlike nests constructed of twigs, they form more or less permanent structures which can withstand the rainy season.

Altevogt & Davis (1979) observed that metal nests were frequent in Indian cities and felt that House Crows develop a preference for wire. Lamba (1976) described the nests built in farming areas as being composed mainly of twigs. The difference observed in the Mombasa nests probably reflects merely the difference in available nesting material rather than any preference on the part of the crows. Fallen twigs and leaves in Makadara and other parts of the town centre are cleared and, in fact, dumped at Mzimle so that crows collect nesting material from the many building sites, motor and *jua kali* (open-air) yards in the vicinity. On the other hand, twigs are plentiful in Mzimle. Other items which were used included strips of metal, fragments of plastic bags, electrical flex and string. In India, nests have been reported containing large numbers of gold and silver spectacle frames (Dewar 1905) and aluminium coat hangers (Altevogt & Davis 1979). Although other corvid species do use wire for nest-building it is apparently an infrequent practice (Walford 1931) presumably because they are less urbanized in the breeding behaviour.

Nests were situated at an average height of 7.3 m at Makadara and 6.4 m at Mzimle and, as reported by Ali & Ripley (1968-74), none was found lower than 4 m. Their heights were estimated using 5-m poles for reference. Large trees contained up to six nests but these were always well separated. Lamba (1976) described House Crows as maintaining a nesting territory, usually of a few metres and counted up to nine nests in large trees (Lamba 1963).

Densely leafed trees, such as neem, mango and weeping-fig, were most favoured as nesting sites, although more open species such as casuarina and coconut palms were also sometimes utilized. During the three years of the nest collecting campaign all nests located have been situated in trees. In Bombay and other Indian cities, House Crows often nest on man-made structures such as lamp posts, pylons and buildings which reflects a shortage of trees (Baker 1932). Goodwin (1986) indicates their preference for trees as nesting sites. The habit of building metal nests on electrical installations occasionally results in short circuits, such as those that repeatedly delayed trains in Bombay in 1922 (Ali & Abdulali 1937).

Clutch size and eggs

Of 15 nests containing young chicks and therefore representing complete clutches, two nests contained two eggs, five contained three, seven contained four and one contained five, with an average of 3.9 eggs per nest (Figs. 3 and 4). This tallies closely with the observations of Lamba (1976) where he recorded average clutch sizes of 4.1 among 65 nests in 1965 and 3.9 among 58 nests in 1966. Eggs were greyish green with irregular brown brown speckles and closely resemble those described by Indian workers (Ali & Ripley 1968–74, Lamba 1979).

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SHORT COMMUNICATIONS

Hamerkop *Scopus umbretta* feeding amongst a herd of African Buffalo *Syncerus caffer*

Lewis (1989) quoted two instances of Hamerkops *Scopus umbretta* taking prey items disturbed by solitary African Buffalo *Syncerus caffer*. A third example of this commensal relationship, in this case involving a herd of these ungulates, was observed while the 1989 note was in press.

The incident occurred on 30 March 1989, near the Kichwa Tembo Camp, in the north of the Maasai Mara Game Reserve (1°15S 35°01E), Kenya. A lone Hamerkop was walking in the midst of a herd of some 200 buffalo, catching prey items disturbed by their feet. As in the other two cases, the buffalo paid no attention whatsoever to the bird, but the latter was forced to fly up from time to time, to avoid being trampled by their hooves. This sighting is analogous to the record of a Hamerkop feeding amongst cattle in Zimbabwe (Dean & MacDonald 1981).

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Scopus 14: 17, May 1990 Received 10 April 1989

First record of the African Marsh Harrier *Circus ranivorus* for Ethiopia.

On 12 November 1988 we were bird watching along the western shore of Koka Lake in Ethiopia (8°23N, 39°02E), together with S.C. Madge and others, when a dark brown harrier flew directly overhead in a southerly direction. The bird was first seen by C- GC who quickly drew everybody's attention to it. On account of its distinctive plumage the bird was immediately identified as a juvenile African Marsh Harrier *Circus ranivorus*, a species which is familiar to both of us from Kenya and Botswana. This is apparently the first record for Ethiopia (Urban & Brown 1971, J.S. Ash, pers. comm.) and the most northerly ever recorded for this species.

The bird was watched for about a minute and the following description was compiled from notes made by C-GC and NJR:

Size, shape and flight action similar to the Eurasian Marsh Harrier *C. aeruginosus*. Overall colouration dark or rufous brown (including the head and shoulders), paler than female or juvenile Eurasian Marsh Harrier. Underparts rufous brown with a broad, even creamy-white inner primaries and largely creamy underwing converts contrasting with dark brown secondaries and outer primaries. Head, back and rump dark rufous-brown. Upperwing and tail dark brown without noticeable barring.

The African Marsh Harrier is a patchily distributed resident in Africa from Cape Province north to Kenya, west to Uganda, eastern Zaïre and Angola. Although normally frequent to common, its numbers have declined in the northern and southern parts of its range because of drainage of marshlands (Brown *et al.* 1982). In East Africa it is largely a bird of permanent swamps, often at higher altitudes (up to 3000 m and seldom below 1500 m), and hence rather local. Although mainly sedentary, individuals will wander to seasonal swamps where they may even breed (Britton 1980). It is curious that apparently suitable highland marshes in Ethiopia are totally unoccupied, and even the extensive grasslands of East Africa are rarely used. The latter niche is largely filled by the three migrant harriers from the Palaearctic (Lewis & Pomeroy 1989). The Eurasian Marsh Harrier, which has in the past been considered conspecific with the African Marsh Harrier (e.g. Mackworth-Praed & Grant 1957), is a frequent to common migrant and winter visitor to much of eastern Africa (including Ethiopia) and the two species are sometimes seen together.

The distribution of the African Marsh Harrier in Kenya represents the northern limit of its range, with most records in the west Kenya highlands (Lewis & Pomeroy 1989). Elsewhere it has been recorded once in the Sudan where an immature was caught and ringed at Juba on 28 October 1978 (Nikolaus 1979). In addition, Nikolaus (1987) mentions some uncertain records further north, from Lake No, and suggests that it has possibly been overlooked in Sudan. There are also five recent records from southern Somalia (Ash & Miscell 1983, Douthwaite & Miscell, in press). Its occurrence in Ethiopia as a vagrant is therefore not unexpected. Although the species may breed throughout the year (depending on latitude) in southern Africa (Maclean 1985), four reported breeding records in East Africa were all in June or July (Brown & Britton 1980). Dated records outside its breeding range in Kenya are all between November and April (Lewis & Pomeroy 1989), and three of the Somalia records were in February and March (Ash & Miskell 1983). The occurrence of a juvenile in the Ethiopian Rift Valley in November fits with this pattern.

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Scopus 14: 17–19, May 1990 Received 16 October 1989

Tawny Eagle *Aquila rapax* following a foraging pack of Hunting Dogs *Lycaon pictus*

Late on an overcast afternoon in early August 1989, I was following a foraging pack of hunting dogs *Lycaon pictus* in the north of the Maasai Mara Game Reserve, Kenya. The light was failing and, despite dashing here and there and making a lot of noise, the dogs did not seem to be fully committed to the chase, making only brief, half-hearted sorties after the large number of potential prey animals in the area.

Still, I decided to follow the pack for a little longer to see if a kill would be made, and it was at around 18:00 hrs, when dusk was already falling, that a subadult Tawny Eagle *Aquila rapax* suddenly swooped low over the dogs and perched in a small bare tree directly above them. Then, as the pack charged off on another erratic, gambolling pursuit, the eagle waited a few moments, pursued them, flew low over them again, and then alighted on another perch, nearby. Even though the dogs had yet to make a kill, the eagle was still following the dogs in this manner at 19:00 hrs when I left the scene. Darkness had fallen by this time, and headlights were essential for driving.

There were two possible explanations to account for the eagle's presence with the dogs. First, large aerial scavengers are thought to locate kills by watching the movements of large mammalian predators, and the Tawny Eagle may have been following the dogs' (and other predators'?) progress from high above, when the failing light conditions forced it to fly low over them, in order to keep them in view. Alternatively, and more likely in view of Brown *et al.*'s (1982) note that Tawny Eagles are usually roosting from around two hours before sunset, the roosting bird may have opportunistically set off in pursuit of the running pack, sensing the possibility of food, after the erratic course of their foraging had brought them close to its roosting tree.

In either case, the eagle seems to have the ability to associate the hunting pack with food, to anticipate the provision of food items produced by the pack's hunting and devouring. This anticipation seems distinct from many scavengers' rapid attraction to already existing food sources, e.g. carcasses.

This close, active, determined pursuit of large, foraging predators does not appear to be a common phenomenon. I have never witnessed it during several years of safari work; and neither has John Fanshawe (pers.comm.), who has watched over 200 pursuits by Hunting Dogs in the Serengeti and in the Maasai Mara. Tawny Eagles are, however, known to be attracted by the gunshots of parties of bird-shooters both in Africa and India, and to follow the hunters until they are able to fly in, often very boldly, to steal flushed,

wounded or killed birds (Brown & Amadon 1968, Steyn 1982). Dean & MacDonald (1981) record similar behaviour in African Hawk Eagles *Hieraaetus spilogaster*, Bateleurs *Terathopius ecaudatus*, Eurasian Marsh Harriers *Circus aeruginosus* and Pallid Harriers *C. macrourus*.

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Scopus 14: 19–20, May 1990 Received 26 September 1989

A threat display of the Water Thicknee *Burhinus vermiculatus*

A seasonally flowing *lugga* to the south of Buffalo Springs Lodge in northern Kenya contains a pair of Water Thicknees *Burhinus vermiculatus* that are often readily visible by day, roosting on a rather exposed ledge beneath an overhanging rock face and above a small pool. One morning, when these thicknees were roosting in their usual motionless state, a Monitor Lizard *Varanus* sp. suddenly appeared over the lip of the ledge and walked right up to them.

This formidable carnivore was about a metre long and it seemed that the birds must be attacked, but they immediately turned to face it, spreading their wings fully and holding them up and away from the body, so that their full ventral surfaces faced the lizards. The carpal joints of the wings were raised to around the level of the birds' eyes, and the wing tips were higher still. This display greatly increased the bird' apparent size, while the white underwing coverts became suddenly very prominent as glaring white areas which, together with the birds' bills, were kept facing down at the lizard. The birds continually uttered sharp, high calls.

This confrontation lasted for 30 seconds or so, after which the lizard turned and walked along the ledge past the thicknees, and disappeared into the surrounding bushes. As the lizard passed them, the thicknees turned so as to keep the full ventral area of their wings directed at it. After it had disappeared, they resumed their motionless roosting.

There does not appear to be any information on Water Thicknee displays in the literature (Urban *et al.* 1986). For the closely related Eurasian Stone Curlew *B. oedicnemus*, however, Cramp & Simmons (1983) quote an instance in which an individual stood its ground and raised and fanned its wings on being threatened by a Stoat *Mustela erminea*. This appears to be similar to the Water Thicknees' stance, whereas the threat posture described for the more distantly related Spotted Thicknee *B. capensis* has the

wings held half-open and drooping, so that the tips of the primaries brush the ground (Urban *et al.* 1986).

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Two heterosexual displays of the Black-faced Sandgrouse *Pterocles decoratus*

Nothing is apparently known of the heterosexual displays of the Black-faced Sandgrouse *Pterocles decoratus*, and this is true also of most of the other members of its family, the Pteroclidae (Urban *et al.* 1986, Cramp & Simmons 1985). This note describes two displays performed by presumed pairs of this species in the Samburu area of northern Kenya. Both observations were made between late July and late August, which is within the June–August breeding peak for sandgrouse in this region (Brown & Britton 1980).

In the first of these displays, the female was sitting motionless on the ground when the male, starting from *c.* 1.5 m away, walked straight towards her, head on, continually bowing and lifting his head in a slow, deliberate fashion. When next to the female, the male raised the front part of his body and held his neck and head up vertically, so that his bill pointed skywards. This posture was held for about 10 seconds, after which the male walked away. The whole display was silent. The female remained motionless throughout, and she was later found not to be sitting on eggs.

Male sandgrouse carry water to their young in their belly feathers and, except for the vertically pointed bill, the upright posture of this male was similar to the stance that they adopt when they wish their young to drink (see Cramp & Simmons 1985, p. 256 Fig. B, and Burton 1985 p. 72). This might suggest some kind of ritualized presentation of the drinking feathers by the male. Another feature of this display is that it strongly emphasizes the male's black throat streak which, together with the upwards-pointing bill, make a visually striking, vertically linear feature.

Two similar displays are mentioned in the meagre literature on this aspect of sandgrouse. Pairs of the Yellow-throated Sandgrouse *P. gutturalis* perform bobbing movements while facing each other that are presumed to constitute courtship (Urban *et al.* 1986), and the display of Pallas' Sandgrouse *Syrrhaptes paradoxus* includes the raising of the front part of the body (Cramp & Simmons 1985).

The display performed by a second pair of Black-faced Sandgrouse involved a male walking silently and rapidly in pursuit of a female, with his head and tail lowered and his neck inflated. This produced an effect very like the courtship display of a male dove *Streptopelia* sp., and may have a similar function. Such dove-like movements are also known in the Pin-tailed *P. alchata* and Pallas' Sandgrouse (Cramp & Simmons 1985, Urban *et al.* 1986).

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The Blue-breasted Kingfisher *Halcyon malimbica* in South-West Ethiopia

The Blue-breasted Kingfisher *Halcyon malimbica* is an endemic sedentary species ranging from Senegal east to Burundi, Rwanda (one record), north-eastern Tanzania, Uganda and southern Sudan (Fry, Keith & Urban 1988) inhabiting areas near water up to 1800 m. The species has not been recorded previously in Ethiopia (Urban & Brown 1971).

At least two Blue-breasted Kingfishers have been observed repeatedly between January and May 1989 in the Legedema River (1400 m altitude), a tributary of the Didessa River in Welega, Ethiopia. The Legedema was hardly flowing at the time and the main items in the bird's diet were probably tadpoles, very abundant in the stream's small pools.

The Blue Nile's tributaries, such as the Dedessa, have carved deep river valleys which dissect the South-Western highlands joining the western lowlands towards the Sudan (Westphal 1975). The habitat similarities between these river valleys and the lowlands were stressed by Urban & Brown (1971) by grouping them under the same geographical area, "Western Ethiopia".

Although the Blue-breasted Kingfisher has so far been sighted only in this area of Ethiopia, it may also inhabit the Didessa River itself and probably other similar rivers found in the region, expanding its previously reported range.

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Scopus 14: 22, May 1990 Received 7 December 1989

Ground Hornbills *Bucorvus cafer* and Marabou Storks *Leptoptilos crumeniferus* feeding in association with mammals

Ground Hornbills *Bucorvus cafer* and Marabou Storks *Leptoptilos crumeniferus* occur in Mikumi National Park, Tanzania. General feeding habits of these two species are different. Ground Hornbills spend much of the daytime walking and searching for food on the ground in groups of at least two individuals. Marabou Storks are common scavengers in regions where game and or domestic animals are abundant, or near human settlements at abattoirs, rubbish dumps and fish camps (Kahl 1966). Marabous are also best known for their attendance, along with vultures and hyaenas, at carcasses of large grazing mammals (Kahl 1966, Houston 1980). While it is not unusual to see Marabous catching aquatic animals such as fish and frogs from swamps and pools during periods of low water, they also catch some prey at grass or bush fires (Kahl 1966) when they occur in loose flocks.

However, there appear to be no reports in the literature of Ground Hornbills and Marabous feeding in association with mammals. On several occasions (see Tables 1 and 2), during field work in Mikumi National Park in May 1988, I observed separately Ground Hornbills and Marabous walking amongst foraging groups of large mammals in a manner similar to that of Cattle Egrets *Bulbucus ibis* when taking flushed grasshoppers and other prey. Mammalian species seen associating with the two bird species included Zebras *Equus burchelli*, Warthogs *Phacochoerus aethiopicus*, Giraffes *Giraffa camelopardalis*, Wildebeests *Connochaetus taurinus*, Impalas *Aepyceros melampus* and Yellow Baboons *Papio cynocephalus*.

Birds observed in association with the large mammals were catching prey disturbed by the movements of the mammals.

Various authors have shown that birds associating with mammals in this manner may increase their prey capture rates (Perrins & Birkhead 1983). It is also possible that such associations offer an advantage as an anti-predator mechanism (two Ground Hornbills among mixed groups of Impalas and Wildebeests took flight when the mammals moved off at the approach of a vehicle).

Although I have been unable to find any previous reference in the literature to Ground Hornbills and Marabous feeding in association with large mammals, this feeding habit is well documented for a number of other avian species. Such species include Crowned Cranes *Balearica regulorum* (Pomeroy 1980), Indian House Crows *Corvus splendens* (Tyler 1980) and Yellow Wagtails *Motacilla flava* (Tyler & Ormerod 1986). A complex association of four other species of hornbills with Dwarf Mongoose *Helogale* sp. has been documented by Rasa (1980)

Table 1. *Association of Ground Hornbills with large mammals (habitat indicated)*

Date/time	Number of birds observed
10 May 1988 (12:00 hrs)	7 birds with mixed groups of Impalas, Warthogs and Yellow Baboons. Open woodland.
12 May 1988 (10:00 hrs)	2 birds with mixed herds of Impalas and Wildebeests. Open woodland.
14 May 1988 (15:45 hrs)	4 birds with a herd of Impalas. Spotted grassland.
15 May 1988 (09:30 hrs)	4 birds with a herd of Wildebeests. Spotted grassland.
18 May 1988 (16.00 hrs)	6 birds with a herd of Zebras (8). Open woodland.

Table 2. *Association of Marabou Storks with large mammals (habitat indicated)*

Date/time	Number of birds observed
14 May 1988 (15:45 hrs)	6 birds with mixed herds of Impalas, Wildebeests and Zebras. Spotted grassland.
14 May 1988 (16:00 hrs)	5 birds with a heard of Giraffes (6). Spotted grassland.
18 May 1988 (16:00 hrs)	5 birds with Impalas. Spotted grassland.
19 May 1988 (16:30–17:30 hrs)	9 birds with mixed herds of Wildebeests, and Zebras and one male Impala. Spotted grassland.

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Scopus 14: 23–24, May 1990 Received 31 August 1988

Long life-span and sedentariness of birds in North Nandi Forest, Kenya.

Survival in tropical passerines is known to be relatively high (Fry 1980, Brown & Pomeroy 1984, Urban 1975). Longevities of ten years or more have been recorded for passerines in Malawi (Dowsett 1985, Hanmer 1987, Piper 1987), while a remarkable twenty-year-old Cameroon Sombre Greenbul *Andropadus curvirostris* has been recorded in Kakamega Forest (Zimmermann 1986). A Rufous Thrush *Stizorhina fraseri* was mist-netted by Christine Dranzoa at Erika Forest, Uganda 15 years after it was ringed (C. Dranzoa pers. comm.).

The National Museum of Kenya and the Naturhistorisches Museum, Vienna, undertook joint expeditions to the North Nandi Forest in western Kenya in 1978 and 1979. In

1979 about 600 birds were ringed and released in the southern part of the forest near Chemisia (at about 1° 15N, 35 00E). From 24–29 September 1988 this site was revisited and 131 individuals were captured. Of these 131, three were birds originally captured between 18–23 November 1979 and were thus at least nine years old. They were a female Brown-chested Alethe *Alethe poliocephalus*, recaptured 100 m from the original site together with a male; a male Banded Prinia *Prinia bairdii* recaptured 150 m from the original site, which had been nearer the forest edge; and a male Red-headed Bluebill *Spermophaga ruficapilla* recaptured within 30 m of the original site. All three birds were in adult plumage when first caught in 1979. They had changed little in weight between the two captures (Brown-chested Alethe 30.0 g in 1979 and 1988, Banded Prinia 14.0 g in 1979 and 13.0 g in 1988, Red-headed Bluebill, 25.5 g in 1979 and 28.0 g in 1988, when the crop was heavily filled with seeds).

The three species remained in the same territories in spite of the structural changes due to selective removal of mature trees, that North Nandi Forest had undergone. The encroachment of characteristic forest-edge bird species into the interior points to the need for the total protection of this forest.

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 Received 31 January 1990

Shrikes, Laniidae, feeding on Marsh Warblers *Acrocephalus palustris* during migration

Most Palaearctic bird species wintering in tropical Africa lay down fat deposits before migration. Moreau & Dolp (1970) mention that shrikes, Laniidae, studied while crossing the Sahara in autumn, contrary to other Passerine species, had no fat reserves.

From 1980 to 1984 during autumn migration 25 000 Palaearctic passerine migrants were caught and ringed in a small desert oasis 25 km north west of Port Sudan in the Sudan Red Sea Hills at Khor Arba'at (Nikolaus 1983a).

In 1984, with three people operating, it was possible to run a standard set of mist nets (four 6-m nets and five 12-m nets) on most days. The nets were up from sunrise (5:00 hrs) to 13:00 hrs in a lemon tree garden of 600 m^2. In the period from 17 August. to 23 September, 12 000 birds were ringed. At 41.2 per cent, Marsh Warblers *Acrocephalus palustris* was the dominant species. Nevertheless, 7.7 per cent of all birds handled were shrikes, of which the Red-backed Shrike *Lanius collurio* was the most common at 4.4 per cent. Other shrikes caught were Nubian Shrike *Lanius nubicus*, 1.6 per cent, Woodchat Shrike *L. senator*, 1.1 per cent, Lesser Grey Shrike *L. minor*, 0.5 per cent, Great Grey Shrike *L. excubitor*, 0.03 per cent and Red tailed Shrike *L. isabellinus*, 0.03 per cent. The main passage took place between the last week of August and the third week of September with the peak in the first week of September. Even though the weather conditions at the study site were very uniform, birds passed in waves, probably dependant on the weather conditions in their take-off area, presumably somewhere between the Eastern Mediterranean Sea and the Caspian Sea.

As in previous years, it was quite noticeable that one or two days after a 'bird wave', a wave of always shrikes arrived (see Table 1). Often the garden was full of shrikes feeding on weak birds, mainly Marsh Warblers, but other species were taken as well. The shrikes nearly always fed on the brain of the killed victim. Most shrikes disappeared the same day as the other migrants, but weak shrikes established territories, for instance near a slowly running water tap or a mist-net, so that some mist-nets had to remain closed. Surprisingly, nearly all the shrikes remaining lost weight, even though there was a good source of food available, and they died after some days. The number of shrikes not leaving Khor Arba'at in 1984 is given in Table 2.

Unfortunately, comparative numbers for the other years' of study at this site are not available. However, in 1981 and 1982 (especially in 1982) large numbers of dead birds were found in the garden every day, while dead shrikes were comparatively few. Also, in 1983, under a single acacia tree in the desert near Atbara (17°35N, 34°25E), the remains of more than 100 birds which had died during autumn migration in 1982 were found (Nikolaus 1983b). In 1983 and 1984 there were no such finds.

In Table 3 the weights of some major species caught at Khor Arba'at are given for 1982 and 1984. The table shows that in 1982, when most passing passerine species were lower in weight, shrikes were in better condition, while in 1984 it was clearly the opposite. This fact could be linked to fattening conditions in the take-off area or unfavourable weather or wind conditions during migration. The fact that shrikes migrating on the same probable route as the other species are reversely affected, could be explained by the observations made at Khor Arba'at: that shrikes feed on other passerines during migration. In years with good migratory conditions for most passerines on the East African migration route, shrikes show greater losses than in years with unfavourable migratory conditions, when drop-out birds offer plenty of food. It could be different in years when alternative food, such as locusts, is available during the desert crossing.

Table 1. *Numbers of shrikes, Laniidae, in relation to total numbers and Marsh Warblers* Acrocephalus palustris *caught at Khor Arba'at in autumn 1984*

August dates	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*	*31*
Total birds	42	25	34	183	249	96	62	28	109	254	442	372	309	434	373
Shrikes	3	3	2	2	4	4	7	-	10	15	16	42	29	34	16
Marsh Warblers	16	3	19	159	217	59	37	17	69	173	305	180	130	275	253

September dates	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
Total birds	505	330	179	117	556	857	1203	1192	631	572	290	388	232	121	65	177
Shrikes	43	29	25	5	24	33	62	113	95	58	39	47	27	24	9	10
Marsh Warblers	276	122	44	41	275	465	596	537	143	170	68	54	24	10	4	14

Table 2. *Percentage of ringed shrikes* Lanius *spp. which died at Khor Arba'at in 1984*

	ringed	dead	per cent
Red-backed Shrike *Lanius collurio*	533	36	6.8
Nubian Shrike *L. nubicus*	186	11	5.9
Woodchat Shrike *L. senator*	133	12	9.0
Lesser Grey Shrike *L. minor*	63	8	12.7

Table 3. *Examples of weights of some Palaearctic passerine birds from Khor Arba'at in 1982 and 1984 for the same autumn period*

Species	1982		1984	
Garden Warbler *Sylvia borin*	16.0 g	(n=78)	16.4 g	(n=525)
Sprosser *Luscinia luscinia*	19.3 g	(n=84)	19.4 g	(n=408)
Marsh Warbler *Acrocephalus palustris*	10.1 g	(n=304)	10.3 g	(n=1461)
Red-backed Shrike *Lanius collurio*	23.4 g	(n=108)	22.7 g	(n=99)
— 1st-year birds	22.4 g	(n=68)	22.0 g	(n=99)
— adult birds	25.0 g	(n=40)	22.9 g	(n=268)

The analysis of population trends in breeding areas could explain population crashes for some species, but long-term data would be needed, especially from places such as Khor Arba'at during migration.

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Scopus 14: 26–28, May 1990 Received 28 September 1989

Breeding records from southern Somalia

The following observations were made during some regular ornithological field excursions of the Somali Ecological Society:

The tiny Mouse-coloured Penduline Tit *Remiz musculus* is recorded as an uncommon, local resident of bush and woodland in the arid and semi-arid regions of Kenya, Uganda and Tanzania (Britton 1980). In Somalia the species is presumed to be an uncommon resident in dry bushland north of Mogadishu (Ash & Miskell 1983).

On 4 November 1988 at 13:00 hrs this species was recorded near a water-hole in dense acacia bush covering the coastal sand-dune, some 20 km south of Mogadishu (2°N) and approximately 10 km inland from the shoreline. The bird was sitting on a perfect little cup-shaped nest made from fine plant substances, to which it carried further nesting material during the course of my observations. The nest was built in a tangle of branches of a *Commiphora* tree some 3 m above ground.

Allen's Gallinule *Porphyrio alleni* has been described by Ash & Miskell (1983) as a scarce Afrotropical visitor to Somalia with one old and two recent records in August and December from the Lower Shebelle region. It is reported as local and uncommon in East and Central Africa, but as a reasonably common, local resident of the coastal lowlands of Tanzania and Kenya, with breeding records at Lake Nakuru, Kiambu, Mombasa, Dar es Salaam, Zanzibar and Pemba (Britton 1980, Williams & Arlot 1980).

On 16 December 1988 at 10:00 hrs two adult Allen's Gallinules with two immatures, slightly smaller than the parents, were observed moving in and out of the reeds alongside a swampy pond near Jannaale, Lower Shebelle region, which suggests that the birds had been breeding there.

These swamps and marshes are located some 85 km south-west of Mogadishu and near the Shebelle river. After the rains they are full to capacity with water and provide refuge for innumerable birds. Apart from Allen's Gallinule I was able to observe a pair Black Crakes *Limnocorax flavirostra* with three young at the same site. A group of huge old kapok trees *Ceiba pentandra* lining the Shebelle river bank at Jannaale were covered with nests of Long-tailed Cormorants *Phalacrocorax africanus*, Great White Egrets *Egretta*

alba, Sacred Ibis *Threskiornis aethiopica* and African Spoonbills *Platalea alba*. In one nest there were no less than four Great White Egret nestlings, whereas the Spoonbills had only one or two young.

Acknowledgements
These observations were shared with John Chapman and Osman Gedow Amir. Thanks go to John E. Miskell, who encouraged this report.

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Scopus 14: 28–29, May 1990 Received 16 August 1989

Blue-eared Glossy Starlings *Lamprotornis chalybaeus* and Wattled Starlings *Creatophora cinerea* associating with livestock

On 23 August 1989 at around 15:00 hrs we watched Blue-eared Glossy Starlings *Lamprotornis chalybaeus* and Wattled Starlings *Creatophora cinerea* associating with a large flock of sheep and goats grazing near the rocky gorge of the Kisaju River on the Kitengela Plains near Nairobi (1° 35S, 36° 48E). Both species, but mainly *L. chalybaeus*, perched freely on the backs of sheep as they moved along, and flew down to pick up food items on the ground. Others collected insects as they walked behind sheep or goats. Both species were seen to pick off ectoparasites from the ears and foreheads of sheep, balancing carefully as they did so. Birds stayed on the sheep for only short periods (up to about 30 s) at a time. They were not seen to perch on the goats, whose short slippery coats may have been more difficult to balance on than the tangled fleece of the sheep.

In their review of bird-mammal associations in Africa, Dean & Macdonald (1981) reported that Wattled Starlings in southern Africa commonly perch on various mammals, including sheep. However, they had no records of this species gleaning ectoparasites. The Cape Glossy Starling *L. nitens* regularly perches on mammals and gleans from them (Dean & Macdonald 1981), but neither behaviour appears to have been reported before for the closely related Blue-eared Glossy Starling. In these species such behaviour is evidently facultative and opportunistic, and, as Dean & Macdonald (1981) suggest, may have formed an intermediate stage in the evolution of the obligate ectoparasite-gleaning of the oxpeckers *Buphagus* spp. On this occasion large numbers of both Wattled and Blue-eared Glossy Starlings were already in the area: several fig trees in the gorge were in heavy fruit, and they had been seen feeding there earlier in the day.

Reference

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Dr Leon Bennun, Box 21149, Nairobi, Pat Frere, Box 14490, Nairobi, and Peter Squelch, Box 41815, Nairobi

Scopus 14: 29–30, May 1990 Received 22 January 1990

Streaky-breasted Pygmy Crakes *Sarothrura boehmi* in Nairobi National Park

On 2 May 1988 a *Sarothrura* was heard calling from an area of recently inundated grassland in Nairobi National Park; it was recognized immediately as *S. boehmi*. Later a tape recording of *S. boehmi* was played at the site and after some 45–50 min an adult male was observed standing at the roadside some 2 m from the tape recorder. It remained motionless for some 30 s before jumping back into the long grass. Later in the week up to four calling birds were located in this inundated area of about 4 ha. More calling birds were then discovered at two flooded sites about a kilometre from the first area, with up to four individuals at one of these new sites and a single bird at the other.

Although the sites were visited on an almost daily basis for the next two weeks, no further views other than glimpses of individual birds making short flights in the tall grassland were obtained, and no calling was noted after 26 May.

The Streaky-breasted Pygmy Crake is a rare intra-African migrant from the southern tropics with very few records from Kenya. Jackson (1938) gives details of two early records from Nairobi in May 1905 and mentions others from Machakos, Kisumu and Trans-Nzoia. The only recent record is of a female (all blackish in colour) flushed by a dog from flooded grassland alongside the perimeter fence of the Nairobi National Park on 8 June 1980 (Fleur Ng'weno *in* East African Bird Report 1980, *Scopus* 4: 106). Since then there were annual occurrences from 1982–85 of migrating birds caught and ringed in May at Mufindi in southern Tanzania (Baker, *et al.* 1984). These were birds presumably moving north from their breeding grounds in Zambia and Zimbabwe.

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D. A. Turner, Box 48019, Nairobi and Dr D. J. Pearson, Browses, Sibton, Saxmundham, Suffolk IP17 2JH, England

Scopus 14: 30, May 1990 Received 29 March 1990

Sighting of Black-billed Barbets *Lybius guifsobalito* in Tanzania

Walking down a perennial stream in cultivated land at 1320 m above sea level in the Musoma area, Tanzania (1° 45'S, 34° 06' 30"E) on 22 August 1986 at approximately 18:15 hrs, I saw a pair of barbets fly into a bare acacia sapling. I was able to observe them clearly during several minutes from a distance of approximately 20 m through x 7 binoculars.

The birds were black above and below with light barring on their primaries. The forehead and throat on to the upper breast was scarlet. The bill was large, typically barbet-shaped and dark. The total length of the birds was *c.* 15 cm.

This is the first documented record of the species from Tanzania. Britton (1980) notes that the bird is wide-ranging in Uganda and that it appears to be extending its range, having been first recorded in western Kenya in 1965.

Reference

BRITTON, P.L. (ED.) 1980. *Birds of East Africa*. Nairobi: East Africa Natural History Society.

Richard P. G. Speir, The Old Billiard Room, Castletownshend, Cork, Ireland

Scopus 14: 31, May 1990 Received 16 March 1988

Green Crombecs *Sylvietta virens* in Busia District, Western Kenya

Gerhart & Paxton (1980) described two birds from the Kakamega Forest, western Kenya, which were subsequently accepted as the first records of the Green Crombec *Sylvietta virens* from Kenya. Earlier Forbes-Watson (1971), Zimmerman (1972) and Britton (1980) had all excluded this species from the Kakamega and Kenya avifaunas, though unpublished sight records had been claimed by a number of observers.

The Green Crombec is a fairly common and widespread species over much of western and southern Uganda, and Carswell (1986) refers to it as the commonest crombec in the Kampala area, being a bird of dense bush, undergrowth, thickets and forest edge. As such, confirmation of its existence in Western Kenya had been expected for many years.

On 19 September 1988 the authors were walking alongside an area of thick bush and riverine thicket in Busia District, Western Kenya (altitude 1150 m) when their attention was drawn to a loud song consisting of a repeated short descending phrase. The singing bird was clearly visible on a nearby bush and was a crombec. Observed for several minutes at a distance of 10–15 m it was quickly identified as a Green Crombec. Although a subsequent heavy downpour of rain curtailed further observations that evening, the following morning several singing birds were located in the area and under ideal light conditions all were positively identified as Green Crombecs.

Although the bird is rather unfortunately named Green Crombec, the upperparts are no more than olive-brown at most and only show traces of green on the primary coverts when seen in good sunlight. The crown, nape, sides of face and upper chest are warm brown while the rest of the underparts are greyish-white. A short, pale, buffy supercilium is visible only at close range. Unlike most other crombecs, the bill is quite long and thin. Subsequent visits to the area over the past eighteen months now show that several birds

are resident in this and nearby areas of Busia District, being particularly numerous in areas of dense riverine thicket. The species is always confined to fairly thick bush, but readily responds to playback of taped song.

Despite dozens of visits to the Kakamega Forest (altitude 1550 m) the authors have failed to locate this species, and have certainly never heard its song. We feel that the Green Crombec is unlikely to be resident there. As in Uganda, we believe this to be a species of dense bush, undergrowth and riverine thickets, probably never occurring above 1200 m.

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D. A. Turner, Box 48019, Nairobi, Dr D. J. Pearson, Browses, Sibton, Saxmundham, Suffolk IP17 2JH, England and B. W. Finch, Box 59749, Nairobi

Scopus 14: 31–32, May 1990 Received 29 March 1990

Two new records for Uganda

The following two species are new for the Uganda list and were from Mt Elgon, Northern Sebei District of eastern Uganda. The records were obtained while making an inventory of the bird fauna of Mt Elgon during March 1989 (authors, unpubl.).

Moustached Green Tinkerbird *Pogoniulus leucomystax*

On 17 March at about 08:00 hrs a single example perched in a tall tree was seen by RR. Later we both watched the bird together for about 30 min. The bird was moving from one branch to another at a height of about 9 m. The plumage was mainly olive-green above, wings darker with yellow edgings to the primaries and the rump was bright yellow. The underparts were greyish and there was a single conspicuous stripe from the base of the bill to the side of the neck.

On 23 March CD saw another individual for 5 min in the mid-canopy of a tree at 2690 m. RR had seen the species once previously in Kakamega Forest, Western Kenya. Britton (1980) states that the bird ranges throughout the highland forests of Kenya and eastern Tanzania up to 3000 m and has been reported from the Kenya side of Mt Elgon.

Black-collared Apalis *Apalis pulchra*

On 25 March RR observed a single Black-collared Apalis in the understorey of the forest at 2375 m. The bird was visible at close range for about 30 s. Next day he saw two more adult individuals together in the same area. They perched nervously at about 3 m range

and then moved from one branch to another. The understorey was dominated by *Mimulopsis* and *Acanthus* sp. The plumage of the birds was dark grey above, white below, with a black collar around the breast and rufous-orange from the sides of the breast to the flanks. RR had seen the species before in western Kenya.

The Black-collared Apalis is a bird of undergrowth; it occurs in central and western Kenya and had been reported from Kakamega Forest and Mt Elgon (Britton 1980, Mann 1985, Lewis & Pomeroy 1989).

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Christine Dranzoa, Department of Zoology, Makerere University, Box 7062, Kampala, Uganda and Robert Rodrigues, Shandy ct., Anchorage, AK 99516, USA

Scopus 14: 32–33, May 1990 Received 3 April 1990

LETTER TO THE EDITOR

Sir,

Savalli (1989) records an observation of Black and White Mannakins *Lonchura bicolor* eating algae in Kakamega Forest, and states that he knows of no other reports of algae-feeding by a granivorous bird. However, Bennun *et al.* (1986) reported probable algae-feeding in the granivorous Oriole Finch *Linurgus olivaceus* at Ol Doinyo Orok (2°29S, 36°48E). Between 22 and 24 March 1986 at least two pairs, one accompanied by an immature male, regularly came down to a particular spot on the bank of the Namanga River. Here they often stayed for up to 15 min, wading and feeding in the shallow water running over the rocks where green algae grew in abundance. These records suggest that finches might often feed on algae, perhaps to supplement the nutrients in their regular diet (cf. Belovsky 1976).

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Savalli, U.M. 1989. Black and White Mannikins *Lonchura bicolor* eating algae. *Scopus* 13: 136.

Dr L. A. Bennun, Box 21149, Nairobi, Kenya

Scopus 14: 33, May 1990 Received 22 January 1990

LETTER TO THE EAST AFRICAN LIST COMMITTEE

The Chairman
East African List Committee
Box 48019, Nairobi

Three deletions from the avifauna of Tanzania

Britton (1980), when defining the status of East African birds, included three species which more recent information suggests should not have been admitted to the avifauna of Tanzania. I suggest that all three should be removed.

Grey-headed Lovebird ***Agapornis cana***

Britton (1980) states that "the nominate race is said to have been introduced to Zanzibar and Mafia Island but there is no evidence of its occurrence since 1920."

In his review of the avifauna of Zanzibar and Pemba, Pakenham (1979) could find no justification for including this species. He quotes Neumann (1898) who only mentions Mafia for this species. The species was reported "in the wild state" up until about 1913 for both Zanzibar and Pemba (Mackworth-Praed & Grant 1973). However, it was probably never well established. Pakenham (1979) quotes Alders (1920, in Pearce 1920) who stated that the species frequented the garden of the British Residency but was otherwise scarce. It therefore seems likely that this species existed on Zanzibar for less than twenty years and during this period it is probable that more than one introduction was made. There are no records for Mafia other than Neumann's.

There have been many attempts to introduce this species to five other Indian Ocean islands and the African mainland at Natal (Long 1981). Despite repeated reintroductions they have mostly been unsuccessful (Forshaw & Cooper 1978, Long 1981). Even seemingly successful introductions in the Seychelles during the 1930s had undergone subsequent population crashes by the 1960s (Penny 1974). This species has not been included in the recent *Birds of Africa* (Fry *et al.* 1988).

There is no known documented evidence to suggest that this species was anything other than an unsuccessful introduction or escapee. It should therefore be deleted from the avifauna of Tanzania and East Africa.

Rose-ringed Parakeet ***Psittacula krameri***

Britton (1980) includes this species in the introduced species category and it has subsequently appeared in the Tanzania Check-list published by the OSC of the EANHS. Britton states that small numbers of introduced birds (probably of the race *borealis*) were observed repeatedly on Zanzibar from 1936 to 1941 but that there is no subsequent record.

Pakenham (1979) included *P. krameri* but disputed the statement in Mackworth-Praed & Grant (1952) "that it is extending its range." There have been no records since Pakenham left the island in 1956 and several visits since 1980 have failed to locate this species. Being observed in small numbers over a period of five years, and with no proof of breeding, is, I feel, insufficient reason to include this species in the avifauna of Tanzania.

During the 1980s one, and occasionally two birds, have been observed in the mature suburbs of Dar es Salaam. However, they have failed to establish themselves and I cannot locate any records of successful or even attempted breeding.

Red-tailed Greenbul *Criniger calurus*

Britton (1980) states, with respect to Tanzania, "there is a single record from Bukoba in NW Tanzania." This record is that of Harvey (1979) who listed this species with several others as being observed in the vicinity of the Lake Hotel in Bukoba town. During my first visit to Bukoba on 10 February 1982 the habitat had changed little since Harvey's visit of 24 October 1970 and all the species mentioned by him were present except *C. calurus*. Sharing this habitat was a flock of Yellow-throated Leafloves *Chlorocichla flavicollis*—a species not mentioned by Harvey. I have visited Bukoba several times since 1982 and spent a number of days birding in the environs of the hotel. The mature garden habitat is an unlikely one for *calurus*. It is considered a strictly forest undergrowth species (Bannerman 1936) and of tangled patches of cover (Mackworth Praed & Grant 1973). There is no suitable forest in or around Bukoba town. The nearest large forest is Minziro some 40 km to the north west. This species was not collected by Andersen nor located during a brief visit in 1984 (Baker & Hirslund 1986). A more recent visit by several ornithologists, during which 400-odd birds were netted, also failed to locate *calurus*.

Harvey's description suits *flavicollis* better than *calurus*. The pale yellow throat of *flavicollis* can look white in poor light and the bird is more gregarious than the usually solitary *calurus* (Dr D. J. Pearson *in litt.*).

This is clearly a case of mistaken identity. The Red-tailed Greenbul should therefore be deleted from the avifauna of Tanzania.

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N. E. Baker, Box 23404, Dar es Salaam, Tanzania

 Received 22 January 1990

REVIEWS

Scientific publications of the Percy FitzPatrick Institute of African Ornithology, 1960–1987 compiled by R.K. Brooke and J. Cooper, 1988. Cape Town: Percy FitzPatrick Institute of African Ornithology. Size 150 x 210 mm, softback, pp. 49. ISBN 0 7992 1175 3. Price not given.

In 1987, the Percy FitzPatrick Institute of African Ornithology decided to shift the emphasis of its studies towards conservation biology. Since this shift will inevitably alter the emphasis of its ensuing publications, the institute has produced this list of their published material from the period 1960–1987, when their aims were more purely ornithological.

This is indeed an impressive document, quoting as it does many hundreds of publications, but it is a great pity that these sources have been listed on a yearly basis, since the finding of literature on any particular topic necessitates a perusal of the entire volume. The production could have been made a far more useful and practical source of reference by the simple expedient of presenting the references in categories, e.g. systematics, ringing data, distributional studies, reviews, obituaries, seabird studies, behavioural studies, miscellaneous, etc. The length of the resulting text would have inevitably been increased because many of the titles would fall into more than one category—but the increased usefulness of this booklet as a source of reference would have more than mitigated the increased costs of production.

Adrian D. Lewis

Birds of the Eastern Caprivi by J. H. Koen, 1988. Benmore: Southern Birds No. 15. Size 145 x 252 mm, softback, pp. 73 including 12 black and white plates and several line maps and stylized ecological cross-sections. ISBN 0 620 10490 2. Price R 6.00, from Southern Birds, Box 650284, Benmore, South Africa 2010.

The Caprivi strip is the finger-like projection of north-east Namibia that extends eastwards between Angola and Botswana into the heart of southern Africa. This useful and comprehensive, annotated species list derives from the author's field observations in the eastern end of this corridor (in the area between the southern border of Zambia and northern Botswana) during 18 months in the late 1970s, together with his thorough survey of the pre-existing ornithological and other literature pertinent to the area. The book begins with an introduction of 24 pages which deals with such fundamentals as geographical location, human population, geology, soils, surface waters and climate, as well as a brief summary of the political history. It is is completed by a summary of previous ornithological and biological research in the area, and by a short section on the methods of data collection and presentation in this study.

The annotated list occupies 42 pages and is the main part of the book. Each species' entry starts with its sequence number in the 1985 edition of *Roberts' Birds of Southern Africa*, together with its English and scientific names. Then status is described as either resident, migrant or vagrant, and distribution as either widespread or localized. Data on abundance are divided into only three classes, namely numerous, frequent and rare: the last of these categories specifies less than five records, whereas a bird with six is hardly "frequent". A fourth category, e.g. infrequent, is needed here. The criteria for all of these descriptive terms are defined in the section on data collection and presentation.

The information in this excellent list is well presented, and full reference is made to the literature. Many of the species' accounts contain brief mentions of habitat and or vegetation, and seasonality of breeding, movements and vagrants are given where known. Other incidental information includes ringing recoveries, notes on the feeding sites of scavengers, mention of Bateleurs arriving at fresh carcasses before vultures, mention of collected specimens, etc.

Two points of particular interest concern Drongos hawking insects around street lights at night, and an intriguing but rather cryptic and uncertain assessment of the Palaearctic Yellow Wagtail *Motacilla flava* as a resident bird. This presumably derives from occurrences during the northern summer, though the entry adds that the species has only been recorded seven times. The book is completed by acknowledgements, a full bibliography, and a check-list of the species mentioned. The editors follow the SAOS nomenclature which omits most hyphens in birds' English species names. Thus we have Knobbilled Duck, Racketailed Roller and Violeteared Waxbill, but Little Bee-eater. In general, though, the book is excellent, and highly recommended.

Adrian D. Lewis

Contributions, which will be acknowledged, should be typed in one-and-a-half or double spacing on one side of the paper only, with wide margins all round, and should be sent in duplicate. Hand-written MSS will also be considered but they must be clearly written, and sent in duplicate too. Both English and scientific names of birds should be given when the species is first mentioned, thereafter only one name should be used; they should be those of a stated work and any deviations from this work should be noted and reasons given. Metric units should be used. Contributions on floppy disk will be most welcome—please contact the Editor for details.

Original black and white photographs and line illustrations should not be larger than A4 (210 x 297 mm). Line illustrations should be on good quality white paper or board, or on tracing material; lettering should be of professional quality or marked lightly in pencil. Each illustration should be numbered (Fig. 1, etc.) and be provided with a legend typed on a separate sheet of paper. All references cited should be listed at the end of the contribution following the form used in this issue.

Names of periodicals must be given in full and, in the case of books, the town of publication and the publisher should be given.

Authors of 'papers' receive three copies of their contribution free of charge. Extra copies, which will be supplied at cost, must be ordered when the MS is accepted. All contributions should be sent to the Editor, G.C. Backhurst, Box 24702, Nairobi, Kenya.

East African Bird Report

This normally forms a separate issue of *Scopus* and each report covers one calendar year and tends to relate principally to the birds of Kenya. Records from Tanzania and Uganda are listed in separate sections. Records should be sent to D. A. Turner, Box 48019, Nairobi as early in the new year as possible to ensure the speedy production of the Report.

Sightings of rare birds may be telephoned through to any OSC member (numbers inside the front cover) in the hope that the bird(s) may be seen by others. Criteria covering the submission of Bird Report records are given in the *Scopus* Supplement of June 1982, and copies may be obtained, free of charge, from D.A. Turner. Records of rare birds are assessed by the independent and internationally-based East African Rarities Committee.

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Continued inside back cover

Additions to *Birds of Somalia, their habitat, status and distribution* (Ash & Miskell 1983)

R. J. Douthwaite and J. E. Miskell

The first annotated species list for the birds of Somalia (Ash & Miskell 1983) reviewed records made before 31 December 1981. This paper presents new information drawn from observations made by the present authors since then. RJD lived in Mogadishu from December 1981 to June 1984, travelling extensively in the Shabeelle valley and occasionally to other parts of southern Somalia. JEM lived in Mogadishu and Beled Weyne from December 1981 to June 1985, and returned to the country twice, in May 1986 and May 1988. He made a number of brief trips to other parts of the country, including three to the north-west.

Besides the authors' own records, this paper includes additional information from other individuals (see Acknowledgements), older papers missed by Ash & Miskell (1983) in their survey of the published literature on Somalia, and from papers published on the birds of Somalia since their paper appeared. This latter category includes papers printed in *Scopus* as well as those published in other journals. In the case of papers from *Scopus*, only records of species recorded ten times or less by Ash & Miskell, and those species new to the country, or found breeding in Somalia for the first time are included. For other recent papers all new information, including additional species/square distribution, is included here so that all data which have appeared for Somalia since Ash & Miskell (1983) are available in one journal.

A summary of the main additions to Ash & Miskell (1983) is given in Table 1 below.

Table 1. *Additions to* Birds of Somalia

Numbers of:	Ash & Miskell (1983)	Present paper
Species recorded	639	646
Species breeding	263	289
Palaearctic migrants	149+	154+
Species recorded 10 or fewer times	188	171
Species recorded within 40 km of Mogadishu	371	384

For those under travel restrictions, Ash & Miskell (1983) used an asterisk (*) to denote species found within 40 km of Mogadishu; in the species accounts which follow we have followed suit.

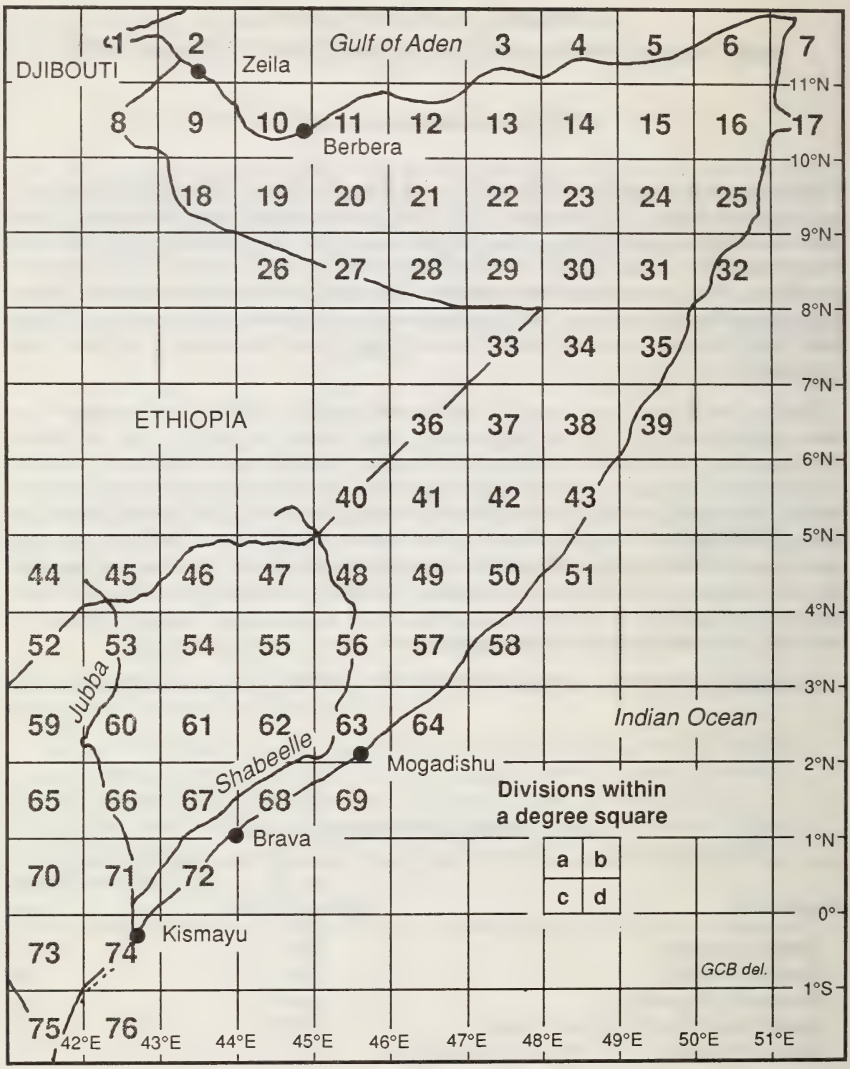

Figure 1. *Map of Somalia showing the half-degree grid system (redrawn from Fig. 1 of Ash & Miskell 1983)*

Species accounts

1. ***Struthio camelus.*** 40c (JEM), 48d (RJD).

2. ***Tachybaptus ruficollis.*** 56c (RJD).

8. ***Oceanites oceanicus.*** 58b (Oct)(JEM).

9. ***Phaethon aethereus.*** 74c (RJD). A single bird, in August 1983, among the Bajuni Islands immediately south of Yamani Creek; fourth record for SE Somalia.

10. ***Pelecanus onocrotalus.*** 56c (RJD & JEM), 68a (RJD), 71b (Wood 1988b).

11. ***Pelecanus rufescens.*** 56c (JEM), 56d, 67d, 68a, 71c, 74ac (RJD). Breeding: 56d (RJD), 66a (MEW North 1943), 71c (Dhesheeg Waamo, Leigh-Browne pers. comm. RJD), 71d (DJ Pearson pers. comm. JEM). First breeding records for Somalia. Breeding in 56d occurred in riverine forest in a Marabou Stork colony near Dinlaabe: one pair with a chick, a third grown, were seen on 9 February 1983, and on 21 November 1983 a pair with two small chicks were present. The record in North 1943 was overlooked by A & M 1983.

15. ***Phalacrocorax africanus.*** 56bc (RJD), 69a (JEM). Breeding: 68b (RJD), 74b (Baccetti 1983). First breeding records for Somalia. Five pairs were seen at nests in the Jannaale heronry (68b) in November 1982. Baccetti (1983) recorded about 100 pairs, with nestlings and fledglings, on the Jubba river (74b) in July-August 1981.

16. ***Phalacrocorax carbo.*** 35b (Toschi 1954), 56cd, 63b (RJD), 71b (Wood 1988b). Breeding: (68b) (RJD, & Baccetti 1983). Baccetti (1983) recorded 30–50 pairs, with fledglings, at the Jannaale heronry in August 1981. RJD saw *c.* 50 pairs there, nest building and apparently incubating, in November 1982.

18. ***Anhinga rufa.*** 48a (JEM), 56c, 67d (RJD), 68a (JEM), 71b (Wood 1988b). Breeding: 74b (100 pairs with nestlings and fledglings; August 1981) (Baccetti 1983). First breeding record for Somalia. A bird with creamy-buff plumage, and extremely worn tail and primary feathers, was seen near Dinlaabe (56d) in February 1984 (RJD).

19a. ***Fregata minor.*** 63cd, 69a (Ash 1985). First records for Somalia.

20. ***Ixobrychus minutus.*** 67d (RJD).

21. ***Ixobrychus sturmii.*** 56c (Nov) (RJD).

22. ***Ardea cinerea.*** 56cd, 60c, 73d (RJD).

23. ***Ardea goliath.*** 48d, 56cd, 67d (RJD), 68a (JEM). Breeding: two colonies, 56d (RJD). First breeding records from southern Somalia. Both colonies were found in gallery forest along the Shabeelle river near Dinlaabe. 14–20 widely spaced nests north of the village, and 13 to the south, were in use on 22 November 1983. Some nest building was seen but most pairs were apparently incubating and one adult was seen feeding a chick. Much of the forest south of the village was cut down by farmers before nesting ended.

24. ***Ardea melanocephala.*** 48cd (RJD), 53c (JEM), 56bcd, 74c (RJD). Breeding: (63b), 63c (Baccetti 1983), (68b) (RJD & Baccetti 1983). 135–150 nests, mostly containing

well-grown young, were found at Jowhar (63b) in September 1981. 150–200 pairs, at all stages of breeding, at Afgooye (63c) July 1981, with 80–100 pairs and many fledglings were present in December 1981. Over 100 pairs, with chicks and fledglings, were seen in the Jannaale heronry (68b) in August 1981, and *c.* 200 adults were seen at nests there in February 1983.

25. ***Ardea purpurea.*** 56d, 72a (RJD).

27. ***Ardeola ralloides.*** 56c (Dec), 63c (May) (RJD).

28. ***Bubulcus ibis.*** 56cd (RJD). Breeding: 2 colonies, 63c (RJD & Baccetti 1983), 74b (Baccetti 1983). First breeding records for Somalia. Baccetti found 300–350 nests at Afgooye (63c) with small chicks and incubation still in progress in December 1982. RJD's colony in 63c was found in flooded Acacia bush at War Gaab, northeast of Balcad. On 27 May 1982 over 1000 birds were present, many apparently incubating. A newly constructed bund along the river ensured the land would not be flooded again, and a year later most of the area had been cleared for a banana farm. Breeding at Libaax Farm, on the Jubba river (74b), took place in the months of June–July. *Erratum*: In Ash & Miskell (1983) squares 68abc are entered twice, on the first occasion in error for 63abc.

29. ***Butorides striatus.*** 56b (RJD), 56d (RJD & JEM), 68a (JEM). Breeding: 63c (RJD), 74b (Baccetti 1983). First breeding records for Somalia. Baccetti recorded 20 nests with eggs in June 1981 at Libaax Farm, on the Jubba river (74b); by August they were empty. RJD found a nest with 4 eggs in a flooded *Acacia* bush at Kooreeba (63c), on 5 October 1983, and another nest with 3 eggs at Walamooy on 1 November 1983.

30. ***Egretta alba.*** 48a (JEM), 56c, 60cd (RJD). 68a (JEM). Range extended north to 5°N. Breeding: 68b (RJD & Baccetti, 1983). First breeding records for Somalia. Baccetti found over 100 nests, and recent fledglings, at the Jannaale heronry in August 1981. RJD saw one bird, apparently incubating, at the same site on 26 February 1983. Adults in breeding condition (i.e. with black bills) were seen at War Gaab (63c) in May and Dinlaabe (56c) in December.

32. ***Egretta garzetta.*** 48c, 56d (JEM), 60c, 73d (RJD).

33. ***Egretta gularis.*** 74c (Aug) (RJD). Previously the most southerly records in Somalia came from a little south of Mogadishu, but the same race (*asha*) is an erratic visitor to the Kenya coast (Britton, 1980). Breeding: 35b (Toschi 1954). One pair nested in a palm at Eil (= Eyl, 35b) in March 1951 (P. Soldi, in Toschi). Probable breeding: 69a (Baccetti 1983).

34. ***Egretta intermedia.*** 48a (JEM), 56c, 60d, 63b (RJD), 67c (JEM).

35. ***Nycticorax nycticorax.*** 56d (RJD & JEM), 63b (RJD).

36. ***Scopus umbretta.*** 56d (RJD). Breeding: (63b), (68b), 74b (Baccetti 1983).

37. ***Anastomus lamelligerus.*** 48a (JEM), 56cd (RJD). Range in the south extended northwards to 5°N.

38. ***Ciconia abdimii.*** 48a, 55c, 56d (JEM), 60cd (RJD). Range in south extended northwards to 5°N.

39. ***Ciconia ciconia.*** 54c (1000, Feb), 66d (100, Mar) (RJD); *c.* 1000 birds were seen widely scattered in fields along the Baydhabo (54d) to Baardheere (60c) road just north of Qansaxdheere (61a) on 14 February 1983. Another *c.* 100 birds were seen at Bu'aale (66d) on 18 March 1982. Fifth and sixth records for Somalia.

40. ***Ciconia episcopus.*** 60d, 72ab (RJD), 74b (Baccetti 1983). Breeding: 74b (Baccetti 1983).

40a. ***Ciconia nigra.*** 48a (JEM), 71d (Pearson 1989). First records for Somalia. One immature was seen 10 km south of Beled Weyne (48a) on 1 November 1983, and one adult was seen at the Fanoole rice scheme (71d) on 5 November 1987.

41. ***Ephippiorhynchus senegalensis.*** 56d (RJD),71b (Wood 1988b).

42. ***Leptoptilos crumeniferus.*** Breeding: 56d (RJD), 66a, 71b (North 1943), 71d (D. J. Pearson pers. comm. to JEM). First breeding records for Somalia. Two colonies were found in 56d; the smaller in riverine forest at Beerta Siyago, south of Dinlaabe, on the east bank of the Shabeelle river. On 9 February 1983 about 500 adults were present, with half- to full-grown young. 100 adults were present on 16 October 1983, when nest-building and copulation were seen. On 21 November *c.* 40 adults and several small chicks were present but forest clearance by farmers was in progress, and by 30 January 1984 only 7 nests remained. The larger colony was found in Acacia woodland on the west bank of the Shabeelle river near Oobale. On 10 April 1984 it held about 1000 nests and full-grown nestlings were seen. M.E.W. North (1943) found *c.* 50 pairs, some incubating, but most building, at Ber Berisso (= Birbiris, 66a) on the Jubba river on 23 October 1941. H.B. Sharpe (in North 1943) reported *c.* 800 nests, some incubating, but most with young, "slightly upstream of Gelib" (= Jilib; 71b) on the Jubba river in late November/ December 1918. These records were overlooked by Ash & Miskell (1983). D.J. Pearson (pers. comm.) found *c.* 500 pairs nesting 10 km north of Kamsuuma (71d) on the Jubba river on 9 November 1987. *Erratum*: square 20a in Clarke (1985) should read 20b.

43. ***Mycteria ibis.*** 48a (JEM), 56c (RJD & JEM), 56d (RJD), 61b (JEM), 68a (RJD & JEM). Breeding: 56d (RJD), 66a (North 1943), 71d (D.J. Pearson pers. comm.). First breeding records for Somalia: about 50 adults, with half- to full-grown young, were seen in the Marabou Stork colony at Beerta Siyago on 9 February 1983. Breeding may also have taken place at the Marabou Stork colony at Oobale (see above) as several juveniles were seen there on 10 April 1984. M.E.W. North (1943) found *c.* 150+ pairs building in the Marabou Stork colony at Ber Berisso (= Birbiris, see above) on 23 October 1941; a record overlooked by Ash & Miskell. D.J. Pearson found *c.* 500 pairs nesting in the Marabou Stork colony near Kamsuuma (see above) on 9 November 1987.

44. ***Bostrychia hagedash.*** 48cd, 55c (RJD), 56d (RJD & JEM), 62b (JEM).

46. ***Plegadis falcinellus.*** 56cd (RJD), 71b (Wood 1988b).

47. ***Threskiornis aethiopica.*** 53c (JEM), 56c (RJD), 56d (RJD & JEM). Breeding: 63c, 68b (RJD). First breeding records for Somalia. *c.* 50 pairs were present at the Cattle Egret *Bubulcus ibis* colony at War Gaab (63c) on 27 May 1982, and *c.* 20 pairs were seen at nests in the Jannaale heronry (68b) on 24 November 1982.

48. ***Platalea alba.*** 48ac (JEM), 56cd (RJD), 61b, 62ab (JEM), 67d (RJD), 71b (Wood

1988a & b). Breeding: 68b (RJD). First breeding record for Somalia; *c.* 30 pairs were seen at nests in the Jannaale heronry on 24 November 1982.

51. ***Phoenicopterus ruber.*** 25b (N. Seligman, photo, 5 May 1984), 68a (JEM). One seen near Kurtunwaarey (68a) on 13 May 1988 is only the second inland record for Somalia.

52. ***Dendrocygna bicolor.*** 56c (RJD).

53. ***Dendrocygna viduata.*** 48a, 53b (JEM), 56bcd (RJD), 67c (JEM), 73d (RJD). The record from 48a extends the range in Somalia northwards to 5°N.

54. ***Alopochen aegyptiacus.*** 10d, 53cd, 54d (JEM), 55c (RJD), 56d (RJD & JEM), 60d (RJD), 61b (JEM). Breeding: 35b (Toschi 1954), 63b, 73d (RJD). First breeding records for southern Somalia. P. Soldi (in Toschi 1954) collected a female with fully developed eggs at Eil (= Eyl, 35b) on 18 March 1951. Three week-old goslings were found in 63b in November, and well-grown goslings were seen in 73d in August (RJD).

56. ***Anas clypeata.*** (10a) (3 records, Clarke 1985), 71d (1 record, Pearson 1989). There are now eleven records from Somalia (see Ash & Miskell 1988).

57. ***Anas crecca.*** 35b (1 record, winter 1950/51, Toschi 1954), (10a) (2 records, Clarke 1985). There are now fourteen records from Somalia (Ash & Miskell 1983 should read, "recorded on 7 occasions on southern inland wetlands and 4 times in NW).

58. ***Anas erythrorhynchos.*** 48a (JEM), 56c, 68a (RJD).

61. ***Anas querquedula.*** 56c, 68a (RJD).

63. ***Anas undulata undulata.*** One collected in November 1912 on the Jubba river, south of Serenli (= Sarinleey, 60c), is the first record of this subspecies, and only the second record of the species for Somalia. The specimen is held in the National Museum, Nairobi.

66. ***Nettapus auritus.*** 56c, 63bc (RJD), between October to 12 December.

67. ***Sarkidiornis melanotos.*** 56c (JEM), 56d, 63b, 72b (RJD).

70. ***Gyps africanus.*** 48a (JEM), 56d (RJD). Range in south extended northwards to 5°N. Breeding: 56d (pair at nest, October) (RJD), 60c, 66a, 71b (M.E.W. North 1944). North (1944) saw *c.* 400 to 500 nests in trees along the banks of the Jubba river, between Bardera (= Baardheere, 60c) and Gelib (= Jilib, 71d), in October 1941.

71. ***Gyps rueppellii.*** 55c/62a (4, Buur Heybo, Dec 1982) (RJD). First record from the south. In the north now known to be a breeding resident (20a) and not uncommon in 19ab with more than 10 records (Clarke 1985).

72. ***Neophron monachus.*** 53cd (JEM).

73. ***Neophron percnopterus.*** 21c, 48a (JEM).

76. ***Circus aeruginosus.*** 56cd (RJD), 71b (JEM).

77. ***Circus macrourus.*** 48a (JEM), 56d (RJD).

78. ***Circus pygargus.*** 48a (JEM).

80. ***Polyboroides radiatus.*** 56d (2, Feb), (63c) (1, Jan and 2, including one juvenile, May) (RJD), 66d (at 3 sites in Aug–Sep) (Wood 1988b), 71b (1, Mar) (D.J. Pearson, pers. comm. to JEM). Ash & Miskell (1983) should read, "recorded on seven occasions" (see Ash & Miskell 1988), so there are now 14 records from Somalia.

81. ***Circaetus cinereus.*** 66d (Wood 1988b), 73d (RJD).

82. ***Circaetus fasciolatus.*** (71b) (Wood 1988a & b), (71d) (D.J. Pearson *in litt.* to JEM). Sixth and seventh records for Somalia.

83. ***Circaetus gallicus.*** 50c (JEM), 56d (RJD).

84. ***Terathopius ecaudatus.*** 10ac (G. Clarke *in litt.* to JEM), 56c (JEM), 56d (RJD & JEM), 68a (JEM), 72b (RJD).

85. ***Accipiter badius.*** 13a (G. Clarke *in litt.* to JEM), 15a (Roche 1983), 48c (JEM).

86. ***Accipiter melanoleucus.*** 73d (1, Aug 1983), (74c) (1, Aug 1983) (RJD). Third and fourth records for Somalia. From riverine forest near Yamani (74c) and Caanoole (73d) creeks.

87. ***Accipiter minullus.*** 48cd (RJD), in riverine forest. Previously not recorded beyond the lower Shabeelle.

89. ***Accipiter tachiro.*** (66d) (3, Feb 1983), 71b (1 Feb 1983) (RJD), (66d) (at 3 sites, Aug to Sep 1986) (Wood 1987 & 1988b), (66d) (1 Mar 1987), (71d) (1 Mar 1987) (D.J. Pearson pers. comm. to JEM). 63c (JEM), a female (wing: 245 mm; tail: 194 mm) mist-netted in a quelea colony near Afgooye on 26 November 1979 is the first Somalia record from the Shabeelle valley. There are now twelve records of this species from Somalia.

90. ***Aquila nipalensis.*** 18a (2, near Boorama, Dec 1982) (JEM). The second record for Somalia.

91. ***Aquila rapax.*** 56d, 61b (JEM), 66d (Wood 1988b), 72b (RJD).

93. ***Aquila wahlbergi.*** (66d) (Wood 1988b), (66d) (D.J. Pearson *in litt.* to JEM). Eighth and ninth records for Somalia.

94. ***Butastur rufipennis.*** 48a, 53a (JEM), 54c, 56b, 60d, 71b (RJD).

99. ***Hieraaetus pennatus.*** 48ac (JEM). Range extended from the equator to 5°N.

103. ***Melierax gabar.*** 48a (JEM), 48cd (RJD), 56b (RJD & JEM), 62a (JEM).

105. ***Melierax poliopterus.*** 57c (JEM). Breeding: 67d (North 1944). M.E.W. North found a nest with a week-old chick near Modun (= Mudun, 67d) on 17 April 1941. A pair fed regularly on insectivorous bats emerging from a roost at sunset, February 1983, near Balcad (63c) (RJD); (see also Ash & Miskell 1988).

106. ***Polemaetus bellicosus.*** 48a (JEM), 56d, 62a, 72a (RJD).

107. ***Haliaeetus vocifer.*** 48a (JEM), 48d, 56b (RJD), 56d (RJD & JEM), 74a (RJD). Breeding: 56d (Oct) (RJD).

108. ***Milvus migrans.*** 48a, 54d (JEM), 55c (RJD), 56bd (JEM), 62a (RJD).

109a. ***Pernis apivorus.*** 71d (Jilib, Nov 1987, Pearson 1989). First record for Somalia.

110. ***Chelictinia riocourii.*** 48a (twice Feb, once Mar, twice Oct, twice Dec) (JEM), *63c (Jan) (RJD), (2c) (May) (Clarke 1985), (71d) (Mar) (D.J. Pearson pers. comm. to JEM). The record in 13a cited by Ash & Miskell (1983) is of a specimen collected by A.R. Tribe on 1 August 1954, and now in the National Museum, Nairobi. There are now 19 records from Somalia, occurring in all months except June and July.

111. ***Elanus caeruleus.*** 19b (JEM), 56d (RJD), 60b (JEM), 67d (RJD), 71b (Wood 1988a, 1988b)

112. ***Macheiramphus alcinus*.*** 63c (2 records) (RJD), 66d (1, Sep) (Wood 1988b), 71b/d (1, Nov) (D.J. Pearson pers. comm. to JEM), 73d (RJD). Third to seventh records for Somalia. One three were seen frequently in riverine woodland at Balcad (63c) from October 1982 to May 1983. A single bird was seen at the same site in November 1983, but none was observed between these dates. Three birds were seen in riverine forest near Buulo Xaaji (73d) in August 1983.

113. ***Pandion haliaetus.*** 43d (JEM), 63b (RJD) 66d (Wood 1988b).

114. ***Falco amurensis*.*** (63c) (Apr 1983) (RJD). Fifth record for Somalia, see species number 124a, below, for details. Also Ash & Miskell 1989.

115. ***Falco biarmicus.*** 66d (one, Aug) (Wood 1988b). The first record for the south.

117. ***Falco concolor.*** 14a (1, no date) (Clarke 1985), 19b (5, 18 May 1988), 48a (1, 30 Apr 1984), 48b (14+, 9 May 1986) (JEM). Tenth to thirteenth records for Somalia.

117a. ***Falco cuvieri.*** 66d (1, Aug, and 1, Sep 1986) (Wood 1988b), 71d (1 on 3 days, Nov 1987—D.J. Pearson, pers. comm. to JEM). First records for Somalia.

119. ***Falco naumanni.*** 10a/c (Mar 1858), 18b and 19a (Feb 1958) (Clarke 1985), 71b (Nov 1987) (Pearson 1989). Now nine records for Somalia.

121. ***Falco peregrinus.*** 48a (Dec & Jan) (JEM).

123. ***Falco subbuteo.*** 48a (May & Oct) (JEM).

124. ***Falco tinnunculus.*** 41b (Nov) (JEM).

124a. ***Falco vespertinus*.*** 63c (RJD). First record for Somalia. At 07:15 on 27 April 1983 flocks of falcons were noticed descending from a great height near Balcad to feed at a termite emergence; by 09:30 *c.* 1000 falcons were present. About three in every four males had dark underwing coverts (i.e. *vespertinus*) while the remainder had white (i.e. *amurensis*). By 10:30 they had gone. The "Gu" rains had broken the previous day, and the night of 26–27 April was foggy. A large north-eastward movement of Eurasian Rollers *Coracias garrulus* also took place on 27 April. The Red-footed Falcon is rarely seen in East Africa, and Britton (1980) mentions only four records, two between mid April and early May, and two in October.

125. ***Polihierax semitorquatus.*** 24a (Roche 1983), 40c (JEM), 48d, 62a, 74c (RJD). Breeding: 48a (copulation, Mar) (JEM).

126. ***Coturnix coturnix.*** Now five records for Somalia (see Clarke 1985).

127. ***Coturnix delegorguei.*** 48a (RJD & JEM), 54d (JEM), 56b (RJD), 60b, 61ab (JEM), 66d (Wood 1988b), 72b, 73d (RJD). The records in 48a extend the range in Somalia northwards to 5°N.

129. ***Francolinus leucoscepus.*** 48c, 53c (JEM), 56d (RJD), 61a, 67c, (JEM).

131. ***Francolinus sephaena.*** 54d, 68a (JEM).

132. ***Acryllium vulturinum.*** 48a (JEM), 48d (RJD), 53ad (JEM), 56bd (RJD), 62b (JEM). Breeding: 63a (small chicks, Aug) (JEM).

133. ***Guttera pucherani**.** 63c (Moltoni 1935), inadvertently omitted by Ash & Miskell (1983).

134. ***Numida meleagris.*** 48a, 53ac (JEM). Found to be reasonably common on both sides of the Shabeelle river just south of Beled Weyne (48a).

148. ***Eupodotis hartlaubii**.** 63c (RJD & JEM), 68b (1, Nov 1982) (RJD). Seventh and eighth records for Somalia (second and third of recent years). Up to five were resident near Balcad (63c) from June 1982 to January 1983 in ungrazed perennial grassland and bushland. Cattle were introduced to the area in October 1982, and the habitat progressively destroyed. No bustards were seen after January 1983.

150. ***Eupodotis melanogaster.*** 68a (JEM).

151. ***Eupodotis ruficrista.*** 48b, 68a (JEM).

152. ***Eupodotis senegalensis.*** 54c (JEM), 56b, 62a (RJD), 67d, 72a (JEM). Breeding: 48a (1 small chick, May) (JEM).

153. ***Neotis heuglini.*** 48a, 50b (JEM).

154. ***Otis arabs.*** Now five records for Somalia (cf. Clarke 1985).

155. ***Otis kori.*** (19b) (5, near Goo'o, 17 May 1988) (JEM). First record in recent years.

158. ***Haematopus ostralegus.*** 68c (JEM), 74a (RJD).

161. ***Charadrius dubius.*** 71b (RJD).

166. ***Charadrius pecuarius.*** 48a, 56d (JEM). Breeding: 74c (1 chick, Aug) (RJD).

170. ***Vanellus coronatus.*** 48d (RJD), 61ab, 62a (JEM). Breeding: 48a (1 chick, 2–3 days old, Mar; 1 chick, one week old, June) (JEM).

173. ***Vanellus melanopterus.*** Now three records for Somalia (cf. Proud 1987).

175. ***Vanellus spinosus.*** 40c, 48b (JEM), 56bc (RJD), 56d, 62b (JEM), 74c (RJD). Breeding: (68b) (3 eggs, Apr) (RJD).

176. ***Vanellus tectus.*** 67c (JEM). Breeding: (63c) (1 downy chick, May) (RJD).

177. ***Actitis hypoleucos.*** 48a, 53a (JEM), 56bcd (RJD).

179. ***Numenius phaeopus.*** 43d (JEM), 74a (RJD).

180. ***Tringa erythropus.*** 66d (2 records, Mar) (Pearson 1989). Seventh and eighth records for Somalia (cf. Ash 1983).

181. ***Tringa glareola.*** 48a (JEM).

182. ***Tringa nebularia.*** 48a, 53c (JEM).

183. ***Tringa ochropus.*** 18b, 48a (JEM), 48cd, 56cd, 60d (RJD).

186. ***Xenus cinereus.*** 68c (JEM).

187a. ***Gallinago media.*** 71c (5+, 10 Nov 1987) (Pearson 1989). First record for Somalia.

191. ***Calidris alpina.*** Now eleven records for Somalia (cf. Clarke 1985). Ash & Miskell (1983) should read, "twice in north and eight times in south".

194. ***Calidris minuta.*** 48a (JEM), 56c (RJD).

197. ***Limicola falcinellus.*** (69a) (1, Dec 1983) (RJD). Third record for Somalia.

198. ***Limosa lapponica.*** 68c (JEM).

199. ***Limosa limosa.*** 71c (1, Nov), (71d) (2, Mar) (cf. Pearson 1989). Seventh and eighth records for Somalia.

200. ***Philomachus pugnax.*** 53c (JEM), 56c (RJD), 71b (JEM).

202. ***Himantopus himantopus.*** 48a (JEM).

203. ***Recurvirostra avosetta.*** 19a (Aug) (Proud 1987), 66d (Mar), 71b (Mar) (D.J. Pearson *in litt.* to JEM). Now at least 12 records for Somalia.

206. ***Burhinus capensis.*** 62b (JEM).

208. ***Burhinus vermiculatus.*** 48a (JEM), 56d (RJD), 66d (Wood 1988b). Breeding: 66d. Nest with two eggs, laid on 7 and 9 August 1986 (Wood 1988b). First breeding record for Somalia.

209. ***Cursorius cursor.*** Breeding: 48a (2 eggs, May) (JEM), 68b (1 egg, Apr) (RJD).

210. ***Cursorius africanus.*** 48a (JEM), 56b (RJD).

211. ***Cursorius cinctus.*** 55c (RJD), 62b, 68a (JEM).

214. ***Glareola pratincola.*** 48a, 68a (JEM).

222. ***Larus hemprichii.*** Breeding: 74c (several eggs on a Bajuni island immediately south of Yamani Creek, Aug 1983) (RJD).

223. ***Larus ichthyaetus.*** (69a) (1 non-breeding adult, Jasiira, Feb 1982) (RJD). Third record for Somalia.

227. ***Anous stolidus.*** 74c (RJD).

229. ***Chlidonias hybridus.*** 63c (1, Sep) (RJD). Eighth record for Somalia (including three records in Pearson 1989).

230. ***Chlidonias leucopterus.*** 74c (RJD).

232. ***Gelochelidon nilotica.*** 68c (JEM), 74c (RJD).

234. ***Sterna anaethetus.*** 74c (RJD). Breeding: 74c (Aug 1983, 500 pairs on Bajuni islands immediately south of Yamani Creek) (RJD).

236. ***Sterna bergii.*** 68c (JEM).

237. ***Sterna caspia.*** 74a (RJD).

238. ***Sterna dougallii.*** 74c (RJD). Breeding: (68c) (eggs, chicks, Sep) (RJD).

242. ***Sterna repressa.*** 68c (JEM). Breeding: 74c (2000 pairs, on the islands immediately south of Yamani Creek, Aug 1983) (RJD).

245. ***Pterocles decoratus.*** 53c, 62a (JEM), 66a (RJD). Breeding: 63c (3 records: 3 eggs, Jan; 2 chicks, Sep; 2 chicks Oct) (RJD).

246. ***Pterocles exustus.*** 21c, 53a (JEM). Breeding: 53c (3 eggs, Oct) (JEM). First breeding record in the south.

250. ***Columba guinea.*** 10d (JEM), 54d (Roche 1985), 56d (JEM). Breeding: 48a (3 records: 1 chick, May; 1 chick, Sep; 2 chicks, Nov) (JEM). First breeding records in the south.

251. ***Columba livia.*** 48a, 54d, 74b (JEM).

252. ***Columba oliviae.*** 15a (M.E.W. North). Breeding: 15a (1 addled egg, May) (M.E.W. North 1964 *in litt.* to D. Goodwin, quoted in Collar & Stuart 1985). *Erratum*: *oliviae* incorrectly spelt as *olivae* by Ash & Miskell (1983).

253. ***Oena capensis.*** 20c, 55c (JEM). Breeding: 63c (2 eggs, Apr) (RJD). First breeding record in the south.

254. ***Streptopelia capicola.*** Breeding: 19b (2 chicks, Dec) (JEM).

255. ***Streptopelia decipiens.*** 48c, 53d, 56d. Breeding: 48a (incubating, Apr) (JEM).

257. ***Streptopelia reichenowi.*** 48d (RJD), 53cd (JEM), 56d (RJD & JEM).

259. ***Streptopelia semitorquata.*** 10d (JEM).

260. ***Streptopelia senegalensis.*** 21c, 56d (JEM), 66d (Wood 1988b). Breeding: (48a) (2 records of 1 egg, May) (JEM).

261. ***Streptopelia turtur.*** 35b (1 collected, winter 1950–51) (Toschi 1954), subspecies uncertain. Sixth record for Somalia (see Ash & Miskell 1988).

262. ***Turtur chalcospilos.*** 48a (JEM), 48cd (RJD), 54c (JEM), 56d (RJD & JEM).

265. ***Poicephalus rufiventris.*** 48d, 56b (RJD), 63c (JEM), 66d (RJD), 68a (JEM), 72b (RJD).

267. ***Corythaixoides leucogaster.*** 20d, 53d (JEM), 56d (RJD & JEM), 68a (JEM).

268. ***Tauraco fischeri.*** 66d (at 3 sites) (Wood 1988b), (71b) (Toschi 1948 & Roche 1985), (71b) (D.J. Pearson *in litt.* to JEM). There are now 14 records from Somalia.

269. ***Chrysococcyx caprius.*** 18b, 48c, 53b (JEM), 71b (Wood 1988a, 1988b), 72b, 74b (RJD).

270. ***Chrysococcyx klaas.*** 48a (JEM), 48cd, 56d (Dec) (RJD). The record from 48a extends the range in the south to 5°N.

272. ***Clamator jacobinus.*** 41b, 54d, 56b (JEM), 72b (RJD).

273. ***Clamator levaillantii.*** 66d (Aug) (Wood 1988b). First recent record, and fifth record for Somalia.

274. ***Cuculus canorus.*** 56cd (1, Nov; 2, Apr; 1, May) (RJD). A north-eastwards migration of 10 individuals was seen near Balcad (63c) at dawn on 6 May 1983. An inversion mist was present at the time (RJD).

274a. ***Cuculus clamosus.*** 20a (1 male, collected by A. R. Tribe, 26 Sep 1957) (Clarke 1985). First record for Somalia.

275. ***Cuculus gularis*.*** 63c (May) (RJD). This record extends the range southwards to 2°N. Ninth record for Somalia, including one in Clarke (1985). Two birds were seen, together for a time, in Acacia bush, on 25 May 1983. One was vigorously pursued by a Drongo *Dicrurus adsimilis*, the host species elsewhere in Africa.

278. ***Ceuthmochares aereus.*** 56d. Resident in riverine forest along the Shabeelle river (RJD).

280. ***Centropus superciliosus.*** 48c, 53cd (JEM), 56d (RJD & JEM), 61b (JEM).

281. ***Tyto alba.*** (68b) (Sep 1982) (JEM). Ninth record for Somalia, including one in Proud (1987).

284. ***Bubo lacteus.*** 48a (JEM), 48cd, 56d, 73d (RJD).

285. ***Ciccaba woodfordii.*** (66d) (at 3 sites) (Wood 1988b), (66d), 71d (D.J. Pearson, pers. comm. to JEM). There are now ten records for Somalia.

286. ***Glaucidium capense.*** (66D) (at 2 sites) (Wood 1988b). There are now eight records for Somalia.

287. ***Glaucidium perlatum.*** 48d, 55c, 62a, 63b, 66d (RJD). Now more than twenty records for Somalia, including eight records in Clarke 1985. Range in south extended eastwards to 46°E. Formerly known only from two records west of 43°E (Ash & Miskell 1983).

289. ***Otus scops.*** 48a (JEM), 48c (RJD & JEM), 56d, 66d (RJD), 68a (JEM), 72b, 73d (RJD).

290. ***Scotopelia peli.*** 66d (at 3 sites) (Wood 1988b). There are now five records for Somalia.

292. ***Caprimulgus clarus.*** 48a (JEM), 66d (Wood 1988b), 68b (Roche 1985).

297. ***Caprimulgus nubicus.*** 19b (G. Clarke *in litt.* to JEM), 68a (JEM).

301. ***Apus affinis.*** 56d (RJD & JEM), 66d (Wood 1988b). Breeding: 62a (feeding young in nest, June) (JEM).

307. ***Cypsiurus parvus.*** 48d, 66d (RJD).

310. ***Colius leucocephalus.*** 54d, 56d, 62a, 64a (JEM).

311. ***Colius striatus.*** 56d (RJD & JEM).

312. ***Urocolius macrourus.*** 15a (Roche 1983), 48c (RJD), 61b (JEM). Breeding: 56b (Nov) (RJD).

313. ***Apaloderma narina.*** Erratum: 4ac (Clarke 1985) should read 4c/14a.

314. ***Ceryle maxima.*** Delete from the Somalia list, and add to list "C" of Ash & Miskell (1983). Patrizi (1935, page 22) reported seeing "in passing" a couple of kingfishers "of very large dimensions, probably *Megaceryle* [*sic*] *maxima*".

315. ***Ceryle rudis.*** 48a (JEM), 48cd (RJD), 53cd (JEM), 56b, 60a (RJD), 67c (JEM). Breeding: 56d (fledglings, Oct) (RJD). First breeding record for Somalia.

316. ***Alcedo cristata.*** 56cd (RJD).

317. ***Ispidina picta.*** 48a (JEM), 48cd, 56b (RJD), 56d (RJD & JEM), 66d (Wood 1988b).

319. ***Halcyon chelicuti.*** 56bd, 66d, 67d (RJD).

321. ***Halcyon leucocephala.*** 48c (RJD & JEM), 48d, 56b (RJD), 56d (RJD & JEM). Breeding: (63c) (excavating burrow, Dec, chicks, Apr) (RJD), 68a (feeding young in burrow, May) (JEM).

322. ***Halcyon senegaloides.*** 56d, *63c (RJD), 66d (Wood 1988b).

323. ***Merops albicollis.*** 48a, 53b (JEM), 56d, 63b (RJD).

324. ***Merops apiaster.*** (63c) (small flocks moving south, 21 Sep) (RJD). Small flocks moving south-west on 21 September 1982 near Balcad constitute the first record on autumn passage in the south. Eleventh record for this species in Somalia, including two in Proud (1987) and one in Pearson (1989).

325. ***Merops nubicus.*** 40c, 53c (JEM), 56d (RJD & JEM). Breeding: (63c) (excavating burrows, Apr) (RJD).

326. ***Merops oreobates.*** Delete from the Somalia list, and add to list "D" of Ash & Miskell (1983). Erlanger's juvenile, identified as *Merops variegatus lafresnayii* by Hilgert (1908, p.313), was re-identified as *M. pusillus cyanostictus* by Zedlitz (1915, p. 31).

327. ***Merops persicus.*** 48a, 56d, *63c (JEM).

328. ***Merops pusillus.*** 48cd (RJD), 54c (JEM), 55c (RJD & JEM), 62a (RJD), 62b

(JEM), 56d, 73d (RJD). Breeding: 48a (chicks, May) (JEM), 56cd, 63c (eggs, Mar to Apr) (RJD).

329. ***Merops revoilii.*** 48a (RJD & JEM), 48bc (JEM), 56d (RJD).

330. ***Merops superciliosus.*** 48cd (RJD).

332. ***Coracias caudata.*** 48c (JEM), 48d (RJD & JEM), 55c (JEM), 56b (RJD), 56c (RJD & JEM), 68a (JEM).

333. ***Coracias garrulus.*** 13a (G. Clarke *in litt.* to JEM), 48ab (JEM), 56c (RJD & JEM), 56d (RJD), 62b (JEM). Hundreds moving NE in 63c on 27–28 April 1983 (RJD); thousands moving NE across the Buulobarde–Dinlaabe road (56cd) on 20 April 1984 (RJD); and thousands flying NE across the Balcad–Jowhar road, 5 km south of Jowhar (63a) on 12 April 1985 (D. Kapya, pers. comm. to JEM). For an earlier reference to a mass-migration of Eurasian Rollers in Somalia see Ash & Miskell 1980.

334. ***Coracias naevia.*** 56c (RJD).

336. ***Upupa epops.*** 48d, 56d, 63b (RJD).

338. ***Phoeniculus minor.*** 62ab (JEM), 63b (Roche 1985).

339. ***Phoeniculus purpureus.*** 48cd, 56d (RJD).

340. ***Tockus alboterminatus.*** 66d (RJD).

341. ***Tockus deckeni.*** 56d (RJD).

343. ***Tockus flavirostris.*** 15a (Roche 1983), 20d/21c, 48a, 53d (JEM), 55c (RJD), 63ab (Roche 1985).

345. ***Tockus nasutus.*** 48a, 53cd, 67c (JEM), 68b (Roche 1985). Breeding: 63c (chicks, July) (RJD). First breeding record for Somalia.

346. ***Bucorvus abyssinicus.*** Now eleven records for Somalia (cf. Clarke 1985, Proud 1987, and Ash & Miskell 1988).

348. ***Lybius melanopterus.*** 56d (RJD), 66d (Wood 1988b). *Erratum*: add an '*', inadvertently omitted by Ash & Miskell (1983).

349. ***Pogoniulus pusillus.*** 48c (RJD & JEM), 48d (RJD), 53cd (JEM), 56bd (RJD), 68b (JEM). Breeding: 48a (2 pairs, Feb; pair, Jun) (JEM). First breeding records for the south.

350. ***Trachyphonus darnaudii.*** 56d (RJD), 61b (JEM), 66d, 72b (RJD). Breeding: 66d (entering tunnel, Mar) (RJD). First breeding record for Somalia. *Erratum*: for *darnaidii* (cf. Ash & Miskell 1983) read *darnaudii*.

351. ***Trachyphonus erythrocephalus.*** 48a (JEM), 68b (RJD). The record of a pair from 68a (coastal dune bushland near Ceel Axmed) extends the range of this species well to the southeast.

353. ***Indicator indicator.*** 48d, 56d, 66d, 73d (RJD). Range in south extended northwards to 4°30'N.

354. ***Indicator minor.*** 56d, 63b (RJD), 66d (Wood 1988b), 67c (JEM), 68b (Roche 1985).

355. ***Indicator variegatus.*** 66d (at 2 sites) (Wood 1988b). Now ten records for Somalia.

358. ***Campethera abingoni.*** 66d (Wood 1988b).

359. ***Campethera cailliautii.*** 66d (2 seen) (Wood 1988b). Seventh record for Somalia.

560. ***Campethera nubica.*** 15a (Roche 1983), 21c, 48a (JEM), 48c (RJD), 53d (JEM), 55c (RJD), 62a (RJD & JEM), 68a (JEM).

361. ***Dendropicos fuscescens.*** 48a (JEM), 56d (RJD), 66d (Wood 1988b), 67c (JEM), 72b (RJD).

370. ***Eremopterix leucotis.*** 71b (JEM).

372. ***Eremopterix signata.*** 62a, 71b (JEM).

381. ***Mirafra gilletti.*** 48ab (JEM).

382. ***Mirafra hypermetra.*** 68a (JEM).

385. ***Mirafra rufocinnamomea.*** (71b) (1, Jul) (Toschi 1948). Sixth record for Somalia.

387. ***Delichon urbica.*** (63c) (RJD & JEM). Up to eleven, March 1983. Eighth record for Somalia; the seventh in recent years.

388. ***Hirundo abyssinica.*** 56d (JEM).

389. ***Hirundo aethiopica.*** 19b (JEM), 55c (RJD), 56d (JEM), 62a (RJD).

390. ***Hirundo daurica.*** Breeding: 13a ("2, possibly 3 pairs were collecting mud from a pool, arriving every 4 or 5 minutes, and were obviously building though the site was not discovered", May) (G. Clarke *in litt.* to JEM). First breeding record for Somalia.

392. ***Hirundo rustica.*** 48b (JEM), 56d (RJD).

394. ***Hirundo smithii.*** 48a (JEM), 56b, 71b (RJD). Range in the south extended northwards to 5°N.

395. ***Riparia cincta.*** 71d (RJD). A flock of 18 at Fanoole No. 2 farm in February 1983 constitutes the third record for Somalia.

396. ***Riparia riparia.*** 56d, 68a (RJD).

397. ***Dicrurus adsimilis.*** 48a (JEM), 48cd (RJD), 53d (JEM), 56d, 72b (RJD).

400. ***Oriolus larvatus.*** 53b (JEM), 56d (RJD & JEM), 62a (RJD).

401. ***Oriolus oriolus.*** 48a (Oct & Apr/May) (JEM), 56c, 68b (Apr) (RJD). Regular passage noted in April in Mogadishu (63c) when the birds feed on fruits of neem *Azadirachta indica.*

402. ***Corvus albus.*** 48a (JEM).

406. ***Corvus ruficollis.*** 48ab, 53c (JEM). Breeding: (63c) (2 chicks, May), (69a) (incubating, May) (RJD).

406a. ***Corvus splendens.*** 7a (Ash 1985), 11c (JEM). Several dozen were seen in May 1988 in the northern port of Berbera (11c), where the species is now apparently well established. Its sudden appearance in Berbera may be due to its spread along the coast from the colony in Djibouti (J.S. Ash *in litt.* to JEM).

409. ***Turdoides aylmeri.*** 40c (JEM).

411. ***Turdoides rubiginosus.*** 48a (JEM), 48cd, 56d (RJD), 71b (Wood 1988a, 1988b). Breeding: 48a (building nest, Mar) (JEM). First breeding record for Somalia.

412. ***Turdoides squamulatus.*** 48cd, 56d (RJD).

413. ***Campephaga flava.*** 56d (Mar), *63c (Jan) (RJD). Eleventh and twelfth records, extending the range to the Shabeelle valley. Ash & Miskell (1983) should read, "4 old and 6 recent records" (cf. Ash & Miskell 1988).

414. ***Andropadus importunus.*** 48a (JEM), 48cd, 56bd (RJD). The record in 48a extends the range in Somalia northwards to 5°N.

416. ***Nicator chloris.*** 66d (2 records in Wood 1988b, and a third from D.J. Pearson, pers. comm.). Tenth to twelfth records for Somalia (cf. Ash & Miskell 1988).

418. ***Phyllastrephus strepitans.*** 48cd (RJD), 56d (RJD & JEM), 66d (Wood 1988b), 68a (JEM).

420. ***Pycnonotus barbatus.*** 41b (JEM), 56d (RJD). Breeding: 48a (three records: building, Apr; incubating, Apr; 1 chick, May) (JEM), (63c) (two records: chicks, Feb; eggs, June) (RJD & JEM).

422. ***Cercomela melanura.*** 15a (Roche 1983).

424. ***Cercotrichas galactotes.*** 15a (Oct, subspecies *familiaris*) (Roche 1983), 48a (JEM), 56d (RJD).

425. ***Cercotrichas leucophrys.*** 48ab, 68a (JEM).

428. ***Cichladusa guttata.*** 48a (JEM), 56b (RJD). Breeding: 68b (building, May) (RJD).

429. ***Cossypha heuglini.*** 56d (RJD), 66d (Wood 1988b).

430. ***Cossypha natalensis.*** 66d (Wood 1988b).

432. ***Luscinia luscinia.*** 71bd (4 records, Nov) (Pearson 1989). Now seven records for Somalia.

433. ***Luscinia megarhynchos.*** 48d, 56d, *63c (Oct to Apr) (RJD). Range in south extended northwards to 4°30'N.

435. ***Monticola saxatilis.*** 15a (Roche 1983), 48a (JEM).

436. ***Monticola solitaria.*** 15a (Oct, subspecies *longirostris*, Roche 1983).

441. ***Oenanthe oenanthe.*** 48a (RJD & JEM).

442. ***Oenanthe phillipsi.*** 21c (JEM).

444. ***Oenanthe pleschanka.*** 48a (JEM), 60c (RJD), 72b (JEM).

446. ***Phoenicurus phoenicurus.*** 55c (1 male, Dec), 56d (1 female, trapped, Oct) (RJD). First autumn passage and overwintering records, and the sixth and seventh records for Somalia.

447. ***Saxicola rubetra.*** 48a (two, Apr) (JEM). Tenth record for Somalia and the first from the south.

450. ***Turdus tephronotus.*** 68b (RJD).

454. ***Acrocephalus griseldis.*** 71d (one, Nov) (Pearson 1989). Eighth record for Somalia.

455. ***Acrocephalus palustris.*** 56d (1 trapped, Apr), (63c) (singles trapped, Apr and May) (RJD), 71b (one record, Nov), 71d (four records, Nov) (Pearson 1989). Ninth to sixteenth records for Somalia.

456. ***Acrocephalus schoenobaenus.*** 48a (three, May) (JEM).

459. ***Apalis flavida.*** 60d (RJD).

460. ***Apalis melanocephala.*** 66d (two records) (Wood 1988b and D.J. Pearson, pers. comm.). Eighth and ninth records for Somalia.

461. ***Camaroptera brachyura.*** 56d (RJD).

462. ***Camaroptera simplex.*** 48d (RJD), 68a (JEM). Breeding: 48a (building, Apr) (JEM).

464. ***Cisticola brachyptera.*** (71b) (Mar) (D.J. Pearson, pers. comm.). Third record, and first modern record for Somalia.

468. ***Cisticola galactotes.*** 56bd, 73d (RJD). Range extended northwards to 4°N.

469. ***Cisticola juncidis.*** 48a (2 sites), 56bc, *63c (4 sites), 67d (RJD). Third to eleventh records for Somalia and the first in recent years. Resident and locally common in ungrazed riverine areas, especially in perennial grassland. Breeding: 63c (4 chicks, June) (RJD). First breeding record for Somalia.

475. ***Hippolais languida.*** 15a (Roche 1983), 56cd (RJD).

477. ***Hippolais pallida.*** 56c (RJD).

477a. ***Locustella fluviatilis.*** 71d (Nov) (Pearson 1989). First record for Somalia.

480. ***Phylloscopus sibilatrix.*** 15a (one, Oct) (Roche 1983), 48a (one, Apr) (JEM). Eleventh and twelfth records for Somalia, and the first from the north.

481. ***Phylloscopus trochilus.*** 48a (Apr & May) (JEM), 56d (one in song, Dec) (RJD).

482. ***Phylloscopus umbrovirens.*** 19b (May & Dec) (JEM). Now eleven records for Somalia, including two in Clarke (1985).

484. ***Prinia somalica.*** 48b, 53c (JEM).

485. ***Prinia subflava.*** (71b) (1+, Nov), (71d) (several, Mar) (D.J. Pearson, pers. comm.). Ninth and tenth records for Somalia.

486. ***Spiloptila rufifrons.*** 15a (Roche 1983), 48a (RJD & JEM), 48b (JEM).

487. ***Sylvia atricapilla.*** 15a (Oct) (Roche 1983). With two records cited by Clarke (1985) there are now ten records for Somalia.

489. ***Sylvia communis.*** 15a (Oct) (Roche 1983), 40c (May) (JEM), 56d (Apr), (63c) (two records, Apr) (RJD). Only one previous record from the south.

490. ***Sylvia curruca.*** Now two records for Somalia (cf. Clarke 1985).

492. ***Sylvia mystacea.*** Now ten records for Somalia (cf. Clarke 1985).

493. ***Sylvia nana.*** Now nine records for Somalia (cf. Clarke 1985).

494. ***Sylvia nisoria.*** 56d (Apr), *63c (Apr) (RJD), 74b (Nov) (Pearson 1989). Fifth to seventh records for Somalia.

495. ***Sylvietta brachyura.*** 15a (Roche 1983), 48a (JEM), 54d (Roche 1985).

496. ***Sylvietta isabellina.*** 48a (JEM).

498. ***Bradornis microrhynchus.*** 48ac (JEM).

501. ***Melaenornis pammelaina.*** (71b) (Feb) (Roche 1985). Third record for Somalia.

504. ***Muscicapa striata.*** 15a (Oct) (Roche 1983), 48a (May) (JEM).

505. ***Batis minor.*** 56d (RJD).

509. ***Erythrocercus holochlorus.*** 66d (Wood 1988b). Seventh record for Somalia.

510. ***Terpsiphone viridis.*** 48cd, 55c, 56d, 63a (RJD). Not uncommon in riverine forest (cf. Ash & Miskell 1983, who state "nowhere common").

511. ***Trochocercus cyanomelas.*** 66d (3 sites) (Wood 1988b). Now eleven records for Somalia.

517. ***Anthus similis.*** 15a (Roche 1983). Erratum: the record for square 69a in Ash & Miskell (1983) is referable to *Anthus novaeseelandiae* (J.S. Ash, *in litt.*).

518. ***Anthus trivialis.*** 15a (Oct) (Roche 1983).

521. ***Motacilla aguimp.*** 66d (Wood 1988b).

522. ***Motacilla alba.*** 10d, 48ac (JEM), 55c (RJD), 63a (Roche 1985).

523. ***Motacilla cinerea.*** 15a (Roche 1983), 55c, 56d (RJD).

524. ***Motacilla flava.*** 56c, 63b (RJD).

526. ***Dryoscopus cubla.*** 56d (RJD).

527. ***Dryoscopus gambensis.*** Now five records for Somalia (cf. Clarke 1985).

528. ***Dryoscopus pringlii.*** 63c (Toschi 1948, Roche 1985).

529. ***Laniarius ferrugineus.*** 68a (JEM).

530. ***Laniarius funebris.*** 56d (RJD).

532. ***Malaconotus blanchoti.*** 48a (JEM), 48cd (RJD), 53bcd (JEM), 72b, 73d (RJD).

534. ***Malaconotus sulfureopectus.*** 56d (RJD), 67c (JEM).

535. ***Nilaus afer.*** 48a (JEM).

536. ***Rhodophoneus cruentus.*** 21c (JEM), 48a (RJD & JEM), 53cd (JEM).

537. ***Tchagra jamesi.*** 56d, 60d (RJD), 66d (Wood 1988b).

538. ***Tchagra senegala.*** 56b (RJD). Range in south extended northwards to 4°N.

540. ***Lanius collurio.*** 56bc (Apr, May) (JEM).

541. ***Lanius dorsalis.*** 71b (JEM). Breeding: 48a (3 eggs, May) (JEM). First breeding record for Somalia.

543. ***Lanius isabellinus.*** 15a (Oct) (Roche 1983), 48a (Apr, Nov) (JEM).

544. ***Lanius minor.*** 56cd (Apr, May) (JEM).

545. ***Lanius nubicus.*** Now 18 records for Somalia (cf. Clarke 1985).

549. ***Prionops plumata.*** 56d, 72b (RJD).

550. ***Prionops retzii.*** 66d (Wood 1988b).

553. ***Cosmopsarus regius.*** 56d (RJD), 62a, 68a (JEM).

554. ***Creatophora cinerea.*** 48b (JEM), 60c (RJD), 66d (Wood 1988b), 72b (RJD). Breeding: 19a (Proud 1987). First breeding record for Somalia.

556. ***Lamprotornis corruscus.*** 66d (RJD).

557. ***Lamprotornis purpuropterus.*** 48cd (RJD). Breeding: 56d (fledglings, July) (JEM). First breeding record for Somalia.

558. ***Onychognathus blythii.*** Breeding: (20a) (pair feeding young in nest, May) (JEM).

559. ***Onychognathus salvadorii.*** 48a (JEM), 48c (RJD & JEM).

560. ***Speculipastor bicolor.*** 48cd (RJD), 55c (JEM), 66d (Wood 1988b).

561. ***Spreo albicapillus.*** Breeding: 20c (building, May), 21c (two records: one egg, May; 4 chicks, May), 48a (two records: building, Apr; fledglings, July) (JEM). First breeding records from the south.

562. ***Spreo fischeri.*** 48d, 67d (JEM). Breeding: 48a (three records: building, Mar; 4 chicks, June; 4 chicks, Nov) (JEM).

563. ***Spreo shelleyi.*** 48a (Oct) (JEM).

564. ***Spreo superbus.*** 53d (JEM), 72a (RJD). Breeding: 48a (two records: building, Apr; pair, June) (JEM).

566. ***Buphagus erythrorhynchus.*** 48a (JEM), 48d (RJD), 53c, 67d (JEM), 72b (RJD & JEM).

567. ***Anthreptes collaris.*** 56d (RJD).

568. ***Anthreptes orientalis.*** 41b, 48a, 53d (JEM), 55c, 56d (RJD).

570. ***Nectarinia amethystina.*** 66d (Wood 1988b). Breeding: 71d (female incubating or brooding, male displaying and defending territory) (Wood 1988b & *in litt.*). First breeding record for Somalia.

571. ***Nectarinia bifasciata.*** 53b (JEM).

572. ***Nectarinia habessinica.*** 48a (JEM). First record for the Shabeelle valley.

573. ***Nectarinia hunteri.*** 55c (RJD), 63b (Toschi 1948). Breeding: 63c (female feeding fledgling, May) (JEM). First breeding record for the south.

574. ***Nectarinia mariquensis.*** 19a (one egg, July) (Kreuger 1958). Inadvertently omitted by Ash & Miskell (1983). Also (19a) (nest, Mar) (Clarke 1985). First breeding records for Somalia.

575. ***Nectarinia nectarinioides.*** 48a (Mar-Apr, and Nov) (JEM). Eighth and ninth records for Somalia, and the first beyond the Jubba valley.

576. ***Nectarinia olivacea.*** (66d) (3 sites, Aug and Sep) (Wood 1988b), (71b) (Jan) (JEM). Ninth to twelfth records for Somalia. Previously considered to be an uncommon species (Ash & Miskell 1983), but Wood (1988b) found it to be locally abundant in 66d, where he captured and ringed over one hundred individuals.

578. ***Nectarinia venusta.*** 15a (Roche 1983), 48b, 61a, 62a (JEM).

579. ***Nectarinia veroxii.*** 66d (Mar) (RJD) and (2 sites, Aug & Sep) (Wood 1988b), 74b (Mar) (D.J. Pearson, pers. comm.). Sixth to ninth records for Somalia.

580. ***Zosterops abyssinica.*** 15a (Roche 1983), 48a (JEM), 48d (RJD), 71b (JEM). The record in 48a extends the range in the south northwards to 5°N. *Erratum*: the entry in Ash & Miskell (1983) should read "common in NW, west of 49°E".

581. ***Amblyospiza albifrons.*** 56d (RJD).

582. ***Anaplectes melanotis.*** Breeding: 73d (building, Aug) (RJD). First breeding record in the south.

584. ***Euplectes diadematus.*** 56b (RJD), 60b, 62b, 71b (JEM). Breeding: 48a (copulation, May) (JEM). *Erratum*: the range in Ash & Miskell (1983) should read "south of 5°N".

587. ***Ploceus bojeri.*** 48a (JEM), 56d (RJD & JEM), 66d (Wood 1988b).

588. ***Ploceus cucullatus.*** 56d (RJD), 67c (JEM).

590. ***Ploceus galbula.*** 20d (JEM).

591. ***Ploceus intermedius.*** 53d, 54d (JEM). Breeding: 48a (1 egg, May), 54d (1 egg, May) (JEM).

592. ***Ploceus nigricollis.*** 56d (RJD).

593. ***Ploceus rubiginosus.*** 48a (RJD & JEM), 48c (JEM). Range in Shabeelle valley extended northwards to 5°N.

597. ***Quelea quelea.*** 48d (RJD), 60b, 67c (JEM).

598. ***Bubalornis niger.*** 20a, 53d (JEM). Breeding: 48a (colony building, May) (JEM).

599. ***Dinemellia dinemelli.*** 21c (JEM). Breeding: 48a (2 records: copulation, nest building, Apr) (JEM).

604. ***Passer castanopterus.*** 40c, 48a, 61a (JEM). Melanistic pair seen in 48a with normal birds.

607. ***Passer euchlorus.*** Now ten records for Somalia (cf. Clarke 1985).

608. ***Passer griseus.*** subspecies *swainsonii* 21c (JEM); subspecies *gongonensis* 53cd (JEM), 66d (RJD). Breeding: (48a) (building, Apr) (JEM).

609. ***Passer motitensis.*** Now seven records for Somalia (cf. Clarke 1985).

610. ***Petronia pyrgita.*** 48ab (JEM), 48cd (RJD).

612. ***Hypochera chalybeata.*** 56d (RJD), 62b (JEM). Eleventh and twelfth records for Somalia (Ash & Miskell 1983 should read "5 old and 5 recent records").

613. ***Vidua fischeri.*** 56d (JEM), 60d (RJD), 62b (JEM), 63b (Roche 1985).

614. ***Vidua hypocherina.*** 60d (RJD), 61a (JEM).

615. ***Vidua macroura.*** 18a (G. Clarke, in Baird 1979), 68a (JEM). Clarke's record was inadvertently left out of Ash & Miskell (1983). This record and that of Proud (1987) are the only records of this species for northern Somalia.

616. ***Vidua paradisea.*** 48d (RJD), 54c, 61b (JEM), 67d (RJD), 68a (JEM).

621. ***Lagonosticta senegala.*** 18a (JEM), 48cd (RJD), 53cd (JEM), 56d (RJD & JEM). Breeding: (48a) (building, May), (63c) (building, May) (JEM).

623. ***Pytilia melba.*** 48a (JEM), 48cd, 55c (RJD), 62a, 68a (JEM). Breeding: 48a (building, Apr) (JEM).

625. ***Uraeginthus cyanocephalus.*** (63c) (Toschi 1948). Breeding: 63c (1 egg, June) (RJD & JEM). Eleventh and twelfth records for Somalia.

626. ***Uraeginthus ianthinogaster.*** 48a (JEM), 68b (RJD).

627. ***Amadina fasciata.*** 66d (Wood 1988b). Breeding: 48a (1 fledgling, Oct) (JEM).

629. ***Lonchura malabarica.*** 48c (JEM), 48d (RJD).

630. ***Emberiza hortulana.*** 15a (Roche 1983, three specimens). Seventh to ninth records for Somalia (cf. Clarke 1985).

631. ***Emberiza poliopleura.*** 48ab (JEM), 56d, 60d, 62a (RJD).

634. ***Serinus atrogularis.*** 56d (JEM).

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Appendix 1. Gazetteer of localities

Locality name	Geographical co-ordinates		Square No.
Afgooye	2°08'30"N	45°07'E	63c
Balcad	2°21'N	45°23'30"E	63c
Beerta Siyago	3°01'N	45°30'50"E	56d
Beled Weyne	4°44'N	45°12'20"E	48a
Berbera	10°26'N	45°00'30"E	11c
Boorama	9°56'N	43°11'E	18a
Buulobarde	3°51'N	45°34'E	56b
Buulo Xaaji	0°38'S	41°50'E	73d
Buur Hakaba	2°48'N	44°04'45"E	62a
BuurHeybo	3°00'N	44°18'E	55c/62a
Caanoole creek	1°01'30"S	41°59'E (at mouth)	75b
Ceel Axmed	1°37'20"N	44°38'25"E	68b
Dhesheeg Waamo	*c.* 0°01'N	42°28'E (at centre of swamp)	71c
Dinlaabe	3°02'45"N	45°31'E	56d
Fanoole No. 2 farm	0°27'50"N	42°45'E	71d
Goo'o	9°47'10"N	44°54'30"E	19b
Jannaale	1°48'30"N	44°41'30"E	68b
Jasiira	1°57'N	45°11'E	69a
Jowhar	2°46'40"N	45°30'20"E	63b
Kooreeba	2°28'30"N	45°29'E	63c
Kurtunwaarey	1°36'40"N	44°20'E	68a
Libaax farm	*c.* 0°02'S	42°37'E	74b
Muqdisho (Mogadishu)	2°02'N	45°20"E	63c
Oobale	3°05'40"N	45°33'E	56d
Qansaxdheere	2°52'10"N	43°00'10"E	61a
Sarinleey	2°22'40"N	42°17'E	60c
Walamooy	2°18'10'N	45°19'30"E	63c
War Gaab	2°25'10"N	45°26'30"E	63c
Yamani creek	0°52'S	42°07'E (at mouth)	74c

An avifaunal survey of the Trans–Mara Forest, Kenya

L.A. Bennun

The Mau Forest complex forms the largest continuous tract of indigenous forest in Kenya. Collectively its five administrative blocks (the Eastern, Western and South-Western Mau, Trans–Mara and Ol Pusimoru Forests: see Fig. 1) have a gazetted area of some 244 000 ha, about 14.5 per cent of the total gazetted forest area in the country (Wilson 1988a). However, the flora and fauna of this important group of forests remains little-known (Wilson 1988b). While the avifauna of the high (2700–3000 m) and floristically distinct Eastern Mau was described by Sessions (1966, Britton 1979), avifaunal studies elsewhere appear to be limited to short lists (one more than forty years old) of birds from two sites in the South-Western Mau (Toschi 1946, Gichuki *et al.* 1988). Observer coverage for square 61 of the *Bird Atlas of Kenya*, in which most of the Mau Forest complex lies, is estimated as better than 75 per cent for only one of the four quarter square degrees (Lewis & Pomeroy 1989).

This paper reports the results of bird survey work conducted in the Trans–Mara Forest during January–February 1990, when some comparative data were also collected in the South-Western Mau. The survey forms part of a larger environmental study carried out in these forests.

The Trans–Mara Forest

This forest, in Narok District, south-west Kenya, covers about 35 000 ha (14 per cent of the total complex area) in the south-west of the Mau complex. Altitude ranges from about 2100 m in the west to 2400 m near the eastern boundary. Following this shallow gradient, typical moist lower montane forest grades upwards through a transition zone of 'poor' forest (Kerfoot 1964) into bamboo/forest mixture or pure stands of bamboo *Arundinaria alpina* above about 2300 m. Within the gazetted forest boundary part of the bamboo zone has been cleared recently to give way to tea plantations, while the character of the forest at lower altitudes has been substantially changed by extensive and destructive logging that took place from 1979 to 1986 (J. Howell, pers. comm.). Dominant large timber trees once included species such as *Polyscias kikuyuensis*, *Albizia gummifera* and *Olea hochstetteri*, but few specimens of these or other timber species now remain. Timber removal has taken place over most of the area of the Trans–Mara and part of the South-Western Mau, up to about 12 km either side of the existing Olenguruone-Silibwet road. The forest is most degraded near the western boundary, with little high canopy cover. Further east, more tall trees remain and there has been substantial regrowth of non-timber species such as *Neoboutonia macrocalyx* and *Tabernaemontana stapfiana*. Removal of the canopy trees in many places has resulted in a dense and tangled undergrowth layer, dominated by *Mimulopsis* sp. and *Piper capense*, giving way to *Acanthus eminens* at higher altitudes. In damper sites, especially valley bottoms, *Brillantiasia* is common in the understory and extensive stands of tree-ferns *Cyathea manniana* also occur.

The less-disturbed South-Western Mau appears to have a somewhat different forest structure, although with similar dominant species. In the areas visited, the forest was more layered with a distinct understory of *Brillantiasia* and *Neoboutonia*, and was generally much more open at ground level due to the better shade. Although rarely com-

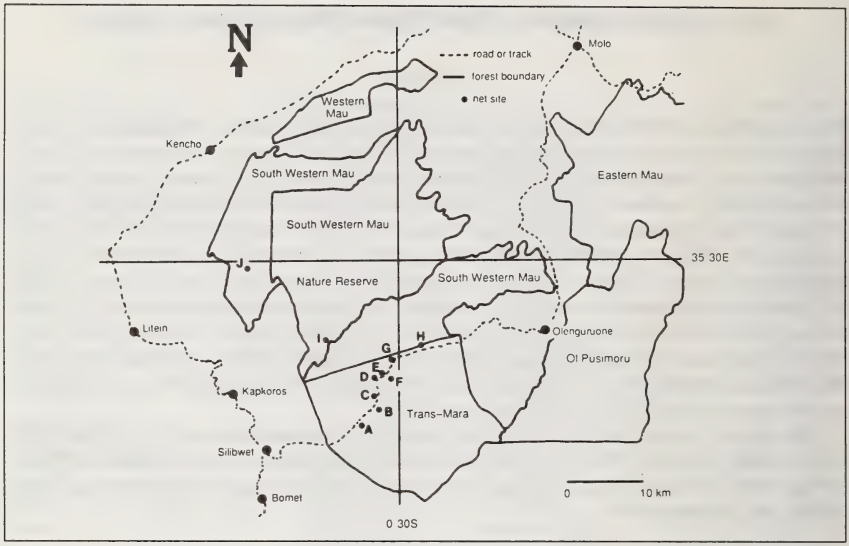

Fig. 1. *Sketch map of the Mau Forest complex showing net-sites worked in the Trans–Mara and South-Western Mau*

plete, the high canopy was less broken than in the Trans–Mara (cf. Kerfoot 1964).

Excluding the bamboo zone, forest structure in the Trans–Mara appears rather uniform, despite gradients in altitude and disturbance. Differentiation between ridgetop, hillslope and valley forest types is probably poor due to the relatively smooth topography, with shallow valleys and broad ridges, and has been further blurred by logging.

Methods

Survey work was carried out in the Trans–Mara Forest Reserve over 22 days between 28 January and 23 February 1990. Brief visits were also made to the South-Western Mau Nature Reserve (20–22 February) and Forest Reserve (24–26 February) (Fig. 1).

Mist-nets were used at eight sites within the Trans–Mara (A to H in Fig. 1), covering a range of altitude and forest disturbance. As well as montane forest, the sites sampled two distinct habitats, tree-fern forest (site G) and bamboo (site H). For ease of access, all sites were close to the alignment of the existing Olenguruone-Silibwet road (Fig. 1). Two additional sites were operated in the comparatively undisturbed forest of the South-Western Mau, one at low altitude in the Forest Reserve (Kipteget River, 2020 m) and one at high altitude in the Nature Reserve (4 km NE of Bosta Hill, 2320 m; Fig. 1, sites J and I respectively).

Most net sites made use of existing narrow trails in the forest; two used transects recently cut for vegetation measures. At each site eight to ten small-mesh, 3-m high nets were set, representing 96–141 m in total length. Wherever possible nets were set in a line with only small gaps between them. Nets were opened for two morning (dawn to about 10:30) and two evening (16:30 until dusk) sessions at the first five sites, and for two morning sessions only thereafter because of deteriorating weather. At two sites nets

were operated for only one full session because of rain. All birds caught were ringed.

January and February are usually the driest months in the Mau Forest (Kerfoot 1964), although some rain is always recorded. Conditions in the Trans–Mara were dry on arrival in late January, but deteriorated steadily over the next month. By the last week in February heavy rain occurred every afternoon, often continuing throughout the night and following morning.

Vegetation measures were made at each net site over five quadrats, positioned alternately 5 m to left and right of the net trail from the end of every second net (starting with net 1). The percentage cover of herb (<0.5 m in height), leaf litter and soil were recorded in a 1 x 1 m square, and the percentage cover of vegetation in four layers (0.5–1 m, 1–3 m, 3–8 m and >8 m) in a 3 x 3 m square. Results were averaged for each net site. Vegetation at two sites was not assessed because of bad weather. Disturbance at each site was rated subjectively on a scale of 0 (none) to 10 (highly disturbed).

Casual observations were made at any time throughout the forest. In addition, to obtain measures of relative abundance for canopy species (which are not sampled by mist nets) a series of timed species counts was carried out (Pomeroy & Tengecho 1986). Counts followed the method outlined by Pomeroy & Tengecho (1986), with two modifications: following preliminary trials which showed that few species were added during the last third of a count, the duration of each count was reduced to 40 min from 60 min, and only birds seen or heard calling within 25 m of the observer were listed. This latter modification was designed to prevent inflated measures of relative abundance being calculated for conspicuous species (see Pomeroy 1989). For each count, each species was scored according to when it was recorded (4 if in the first ten minutes, 3 if in the next ten minutes and so on) and scores were averaged over all counts to give a simple relative abundance index. These counts ignored birds moving below 5 m in the vegetation, and no indices were calculated for inconspicuous mid-level species such as greenbuls that were occasionally seen high in the canopy.

Ten counts were made between 30 January and 16 February 1990 at various points along the forest track and various times of day. In all counts I walked slowly along the road while scanning the trees. Deteriorating weather forced the series to be cut short, so the results should be considered provisional: ideally, 15 counts or more should be conducted over a longer period to provide a good picture of a regional avifauna (Pomeroy & Tengecho 1986).

Results

Species recorded

Ninety-two species were recorded within the Trans–Mara forest block (Table 1) of which 82 (89 per cent) can be considered forest or forest-edge birds (Britton 1980). The observations provide 55 new records for the *Bird Atlas of Kenya*, of which 22 are range extensions. Only one additional species (Broad-billed Roller *Eurystomus glaucurus*) was recorded during observation and mist-netting in the South-Western Mau.

Undergrowth species

In all, 328 birds were captured in the Trans–Mara and another 64 in the South-Western Mau in 10 000 m h^{-1} of netting. Capture rates varied between 3.1 to 5.1 birds per 100 m h^{-1} in the forest but were much lower (1.4/100 m h^{-1}) in the bamboo. Excluding the bamboo site, for which no vegetation measures were available, capture rates across sites were significantly positively correlated with vegetation cover between 0.5 and 1 m

Table 1. *Annotated list of species recorded*

Species are listed by their number in the *Bird Atlas of Kenya* (Lewis & Pomeroy 1989). New records for atlas squares 61C and 61D are indicated under the appropriate columns as follows: **, first record; *, first recent (post-1970) record; PB, first probable breeding record; B, first definite breeding record. Other columns: N_{TM}, number caught in Trans–Mara forest; N_{SW}, number caught in SW Mau forest; BZ, bamboo zone: +, recorded, - not recorded.

	61C	61D	N_{TM}	N_{SW}	BZ
Scopidae (Hamerkop)					
44 Hamerkop *Scopus umbretta*	-	-	-	-	-
Along roadway.					
Accipitridae (birds of prey)					
116 Mountain Buzzard *Buteo tachardus*	-	*	-	-	+
Especially common in bamboo zone.					
121 Long-crested Eagle *Lophaetus occipitalis*	-	*	-	-	-
122 Crowned Eagle *Stephanoaetus coronatus*	PB		-	-	-
135 Black Kite *Milvus migrans*	-	*	-	-	-
Phasianidae (quails, francolins)					
161 Scaly Francolin *Francolinus squamatus*	B	-	-	-	-
Numididae (guineafowls)					
180 Helmeted Guineafowl *Numida meleagris*	-	-	-	-	-
Occasional records throughout forest.					
Scolopacidae (sandpipers, etc.)					
262 Green Sandpiper *Tringa ochropus*	-	-	-	-	-
Ponds along roadway.					
Columbidae (pigeons, doves)					
325 Olive Pigeon *Columba arquatrix*	-	-	-	-	+
326 Bronze-naped Pigeon *Columba delegorguei*	-	-	-	-	-
330 Red-eyed Dove *Streptopelia semitorquata*	-	-	-	-	+
Only in bamboo zone.					
334 Lemon Dove *Aplopelia larvata*	**	-	9	2	-
335 Tambourine Dove *Turtur tympanistria*	B	**	9	1	-
340 Green Pigeon *Treron australis*	-	-	-	-	-
Musophagidae (turacos)					
358 Hartlaub's Turaco *Tauraco hartlaubi*	-	*	-	-	+
Cuculidae (cuckoos)					
365 Red-chested Cuckoo *Cuculus solitarius*	-	-	-	-	+
366 Black Cuckoo *Cuculus clamosus*	-	-	-	-	-
372 Emerald Cuckoo *Chrysococcyx cupreus*	**	**	-	-	+

	61C	61D	N_{TM}	N_{SW}	BZ
Strigidae (owls)					
389 African Wood Owl *Ciccaba woodfordii*	-	-	-	-	-
392 Red-chested Owlet *Glaucidium tephronotum*	**	-	-	-	-
Calling shortly before dawn on most mornings.					
Caprimulgidae (nightjars)					
398 Montane Nightjar *Caprimulgus poliocephalus*	-	-	-	-	+
Along roadway. Not calling.					
Meropidae (bee-eaters)					
444 Cinnamon-chested Bee-eater *Merops oreobates*	-	-	-	-	-
Common along roadway; nest-holes in banks.					
Phoeniculidae (wood hoopoes)					
461 White-headed Wood-hoopoe *Phoeniculus bollei*	**B	-	-	-	-
Bucerotidae (hornbills)					
464 Black and White Casqued Hornbill *Bycanistes subcylindricus*	-	*	-	-	-
474 Crowned Hornbill *Tockus alboterminatus*	-	-	-	-	-
One record only in highly disturbed forest.					
Capitonidae (barbets, tinkerbirds)					
489 Grey-throated Barbet *Gymnobucco bonapartei*	-	-	-	-	-
495 Yellow-rumped Tinkerbird *Pogoniulus bilineatus*	-	*	1	-	+
496 Yellow-billed Barbet *Trachylaemus purpuratus*	**	-	-	-	-
Indicatoridae (honeyguides)					
500 Black-throated Honeyguide *Indicator indicator*	**	-	-	-	-
One record, calling.					
Picidae (woodpeckers)					
515 Fine-banded Woodpecker *Campethera tullbergi*	-	-	-	-	-
519 Cardinal Woodpecker *Dendropicos fuscescens*	-	-	-	-	-
Hirundinidae (swallows)					
557 Mosque Swallow *Hirundo senegalensis*	-	-	-	-	-
One record, highly disturbed forest.					
564 Black Rough-wing *Psalidoprocne pristoptera*	PB	-	-	-	+
Oriolidae (orioles)					
570 Montane Oriole *Oriolus percivali*	**	*	-	-	-
Paridae (tits)					
583 White-bellied Tit *Parus albiventris*	-	-	-	-	-

	61C	61D	N_{TM}	N_{SW}	BZ
Timaliidae (babblers)					
589 Pale-breasted Illadopsis *Trichastoma rufipennis*	**	-	1	-	-
One captured (see Appendix).					
591 Mountain Illadopsis *Trichastoma pyrrhopterum*	*PB	-	19	2	-
594 African Hill Babbler *Alcippe abyssinica*	PB	-	12	-	-
Campephagidae (cuckoo shrikes)					
604 Black Cuckoo Shrike *Campephaga flava*	-	-	-	-	-
Few records.					
607 Grey Cuckoo Shrike *Coracina caesia*	-	*	-	-	-
Pycnonotidae (bulbuls)					
609 Common Bulbul *Pycnonotus barbatus*	-	-	1	-	+
613 Slender-billed Greenbul *Andropadus gracilirostris*	**	-	-	-	-
615 Mountain Greenbul *Andropadus tephrolaemus*	**PB	*	14	5	-
618 Yellow-whiskered Greenbul *Andropadus latirostris*	PB	*	29	5	-
626 Placid Greenbul *Phyllastrephus placidus*	**PB	*	29	3	+
Turdidae (thrushes)					
662 White-starred Forest Robin *Pogonocichla stellata*	B	-	31	4	+
663 Brown-chested Alethe *Alethe poliocephala*	**	-	3	5	-
665 Snowy-headed Robin Chat *Cossypha niveicapilla*	**PB	-	2	2	-
670 Robin Chat *Cossypha caffra*	PB	-	1	-	-
672 Equatorial Akalat *Sheppardia aequatorialis*	*PB	-	7	8	-
678 Northern Olive Thrush *Turdus abyssinicus*	PB	-	9	2	-
680 Abyssinian Ground Thrush *Turdus piaggiae*	**PB	-	18	4	-
Sylviidae (warblers)					
684 Cinnamon Bracken Warbler *Bradypterus cinnamomeus*	**	*	8	-	+
685 Evergreen Forest Warbler *Bradypterus barratti*	**	-	4	-	-
703 Mountain Yellow Warbler *Chloropeta similis*	**	-	2	-	-
708 Blackcap *Sylvia atricapilla*	-	-	29	2	-
712 Brown Woodland Warbler *Phylloscopus umbrovirens*	PB	-	4	-	-
714 Chiffchaff *Phylloscopus collybita*	**	-	-	-	-
715 Willow Warbler *Phylloscopus trochilus*	-	-	-	-	-
One record.					
746 Banded Prinia *Prinia bairdii*	*B	-	16	-	-
751 Black-throated Apalis *Apalis jacksoni*	-	-	-	-	-
One record.					
754 Grey Apalis *Apalis cinerea*	**	-	-	-	-
756 Chestnut-throated Apalis *Apalis porphyrolaema*	-	-	-	-	-
757 Black-collared Apalis *Apalis melanocephala*	-	-	1	-	-
One record in highly disturbed forest.					
759 Black-faced Rufous Warbler *Bathmocercus cerviniventris*	PB	-	1	4	-
One record in dense tree-fern forest.					

	61C	61D	N_{TM}	N_{SW}	BZ
769 White-browed Crombec *Sylvietta leucophrys*	-	-	3	-	-
Muscicapidae (flycatchers)					
782 Dusky Flycatcher *Muscicapa adusta*	-	-	-	-	-
790 White-eyed Slaty Flycatcher *Melaenornis chocolatina*	-	-	1	-	-
799 Chin-spot Batis *Batis molitor*	-	-	-	-	-
803 Black-throated Wattle-eye *Platysteira peltata*	PB	-	4	-	-
809 White-tailed Crested Flycatcher *Trochocercus albonotatus*	PB	-	8	3	-
812 Paradise Flycatcher *Terpsiphone viridis*	-	-	-	-	-
Motacillidae (wagtails, pipits)					
829 Cape Wagtail *Motacilla capensis* Along roadway.	-	-	-	-	-
830 Yellow Wagtail *Motacilla flava* Along roadway.	-	-	-	-	-
Malaconotidae (bush shrikes)					
847 Lühder's Bush Shrike *Laniarius luehderi*	PB		2	-	-
849 Tropical Boubou *Laniarius ferrugineus*	-	-	-	-	-
853 Many-coloured Bush Shrike *Malaconotus multicolor*	**	-	-	-	-
Sturnidae (starlings)					
875 Stuhlmann's Starling *Poeoptera stuhlmanni*	-	-	-	-	-
887 Waller's Chestnut-winged Starling *Onychognathus walleri*	-	-	-	-	-
897 Sharpe's Starling *Cinnyricinclus sharpii*	-	-	-	-	-
Nectariniidae (sunbirds)					
902 Collared Sunbird *Anthreptes collaris*	-	-	-	-	-
921 Northern Double-collared Sunbird *Nectarinia preussi*	-	-	-	-	-
929 Olive Sunbird *Nectarinia olivacea*	-	-	13	9	-
934 Green-headed Sunbird *Nectarinia verticalis*	-	-	-	-	-
Zosteropidae (white-eyes)					
937 Yellow White-eye *Zosterops senegalensis*	PB	*	18	2	+
Ploceidae (weavers)					
960 Baglafecht Weaver *Ploceus baglafecht* Along roadway and in disturbed forest.	-	-	-	-	-
964 Black-billed Weaver *Ploceus melanogaster*	PB	-	6	-	-
965 Brown-capped Weaver *Ploceus insignis*	PB	-	-	-	-
Estrildidae (waxbills)					
1005 Grey-headed Negrofinch *Nigrita canicapilla* One record.	-	-	-	-	-

	61C	61D	N_{TM}	N_{SW}	BZ
1016 Abyssinian Crimson-wing *Cryptospiza salvadorii*	-	-	13	1	-
1036 Black-crowned Waxbill *Estrilda nonnula*	-	-	-	-	-
Along roadway.					
Fringillidae (buntings, etc.)					
1063 Thick-billed Seed-eater *Serinus burtoni*	-	-	-	-	-
Few records.					
1064 Streaky Seed-eater *Serinus striolatus*	-	-	-	-	-
Disturbed forest only, few records.					

(Spearman's r = 0.71, n = 8, $P < 0.05$) but not with any other vegetation feature. The only vegetation feature strongly associated with disturbance was canopy cover above 8 m (r = -0.80, n = 8, $P < 0.02$). A simple measure of species diversity calculated for each site, the Shannon index (Krebs 1978), was also negatively correlated with cover above 8 m (r = -0.82, n = 8, $P = 0.01$) but showed no significant relationship with disturbance *per se* (r = -0.53, n = 9, $P > 0.15$).

It was difficult to relate the distribution of undergrowth species to vegetation measures in finer detail. Most species were widely distributed across sites, although some common species such as Brown-chested Alethe and Evergreen Forest Warbler had an inexplicably patchy distribution. Three species characteristic of disturbed forest and scrub, the Common Bulbul, Robin Chat and White-eyed Slaty Flycatcher, were caught only at the most disturbed and open site (site A). Yellow-whiskered, Mountain and Placid Greenbuls, usually among the most frequently caught species, were almost absent at this site (only one Yellow-whiskered Greenbul captured, none of any species seen) suggesting they are mainly restricted to the better-preserved forest. The Black-faced Rufous Warbler was clearly confined to the least disturbed areas. It was captured and seen at both sites in the South-Western Mau (I and J), where it appeared common and conspicuous in dense shaded undergrowth, but none was seen in the Trans–Mara and only one was caught, in a patch of dense undisturbed tree-fern at site G.

Several species appeared to show altitudinal limitation. Britton (1980) records the Snowy-headed Robin Chat and Equatorial Akalat up to 2000 m and 2200 m respectively. In the Trans–Mara they were caught only at the two lowest sites (A and B, 2200 m and 2240 m). They were recorded again in less disturbed forest in the South-Western Mau at Kipteget River (J, 2000 m) but not at Bosta (I, 2320 m). The White-tailed Crested Flycatcher was caught at every forest site except the two lowest ones (J and A, 2000 m and 2200 m); however, it is known in Kakamega Forest from as low as 1650 m (Mann 1980). None of these species is likely to have been overlooked at sites where they were present.

Canopy species

The relative abundance of canopy species, calculated from timed species counts, is shown in Table 2. The three commonest species (Black Rough-wing Swallow, Cinnamon-chested Bee-eater and Common Bulbul) all forage mainly over or along the road (where the swallows and bee-eaters also breed), so these indices do not give an accurate picture of their relative numbers over the forest as a whole. No such bias should exist for

Table 2. *The relative abundance of canopy species in the Trans–Mara forest as indicated by timed species counts along the roadway (see text for details). The maximum abundance index is 4.0*

Abundance index	Species
3.3	Black Rough-wing Swallow
2.8	Common Bulbul
2.6	Cinnamon-chested Bee-eater
2.5	Chestnut-throated Apalis
2.0	Yellow-rumped Tinker-bird
2.0	Blackcap
1.5	Yellow White-eye
1.4	Olive Thrush
1.4	Chin-spot Batis
1.2	Montane Oriole
1.1	White-headed Wood Hoopoe
1.0	Dusky Flycatcher
0.9	Northern Double-collared Sunbird
0.8	Sharpe's Starling
0.8	Grey Cuckoo Shrike
0.7	Red-chested Cuckoo
0.7	White-eyed Slaty Flycatcher
0.6	Fine-banded Woodpecker
0.6	Grey Apalis
0.5	Brown Woodland Warbler
0.4	Yellow-billed Barbet
0.4	Slender-billed Greenbul
0.3	Collared Sunbird
0.3	Brown-capped Weaver
0.2	Hartlaub's Turaco
0.2	Waller's Chestnut-winged Starling
0.2	Emerald Cuckoo
0.2	White-browed Crombec
0.2	Chiffchaff
0.2	Green-headed Sunbird
0.1	Grey-throated Barbet
0.1	Black-fronted Bush Shrike

the remaining species. The results indicate the advantage of even a short sequence of counts over simple observation: for instance, Red-chested Cuckoos were heard calling almost constantly, but their true numbers (as the counts suggest) must be relatively small. Note that three species, Yellow White-eye, Blackcap, and Northern Olive Thrush, were commonly recorded both in counts and in mist-nets (Tables 1 and 2).

Discussion

In spite of its disturbed state, the Trans–Mara forest still supports a diverse avifauna. Eleven of the 82 forest species recorded there (15 per cent) are distinctly western in their affinities, namely the Red-chested Owlet, Grey-throated Barbet, Yellow-billed Barbet, Mountain Illadopsis, Snowy-headed Robin Chat, Equatorial Akalat, Banded Prinia, Black-faced Rufous Warbler, Lühder's Bush Shrike, Stuhlmann's Starling and Black-crowned Waxbill. The Red-chested Owlet has been recorded in the Kikuyu Escarpment forest (Taylor & Taylor 1988) and the Mountain Illadopsis in the Aberdares (Britton 1980), but otherwise none of these species is known east of the Rift Valley in Kenya. In terms of global conservation, all these species have populations in other parts of their range, chiefly in Uganda and eastern Zaïre. However, recent information on their status is lacking and several are probably uncommon throughout their range (D.E. Pomeroy, pers. comm.). In addition, these western species are of special interest within Kenya because the other forests in which they occur are small, fragmented and increasingly degraded.

The apparent presence of Pale-breasted Illadopsis in the Trans–Mara is surprising and needs confirmation (see Appendix). This species has a disjunct distribution, with the nominate race reaching Kenya at Kakamega and South Nandi while the race *distans* occupies forests 700 km away on the eastern arc mountains in Tanzania (Britton 1980). Significantly, the species has recently been discovered on the forest island of Ol Doinyo Orok, almost half-way between these two populations (Bennun *et al.* 1986). The Ol Doinyo Orok birds, like the individual caught in the Trans–Mara, appeared closer to *distans* than to the nominate race. The Ol Doinyo Orok record is at 1800 m and the altitudinal limit elsewhere in Kenya is at about 1700 m (Britton 1980, Mann 1980), compared to 2240 m for the Trans–Mara record. However, there is a single record in the Cherenganis at 2300 m (Britton 1980). This, together with the Trans–Mara record, suggests both that this species may be frequently overlooked and that it may range considerably higher than has been thought.

Some 23 additional forest or forest-edge species previously recorded from atlas square 61C (Lewis & Pomeroy 1989), which includes much of the Trans–Mara and the South-Western Mau, were not found during the present survey. Additional work will no doubt add many of these to the Trans–Mara list, particularly those that are inconspicuous (e.g. Moustached Green Tinker-bird, Purple-throated Cuckoo-shrike) or that vary in abundance through seasonal altitudinal migration (e.g. Narina's Trogon). Others, especially those whose main ranges are at higher or lower altitudes, or that are known only from old records, may never have occurred in the Trans–Mara itself. There are nonetheless some surprising absences, including Crested Guineafowl (its place apparently taken by the Helmeted, usually a woodland bird), African Goshawk and Doherty's Bush Shrike. The presence of Red-fronted Parrot would also be expected, although it has not yet been recorded from this atlas square. It is clear that habitat modification has had some effect on species composition, with the encroachment of edge species along the road and western margins; such infiltration probably accounts for the negative correlation between undergrowth species diversity and high canopy cover. Most undergrowth species appear to have adapted surprisingly well to the altered forest structure, but the effects on canopy birds are less clear-cut; the possibility of local extinction in some cases due to forest destruction cannot be ruled out. Further study of the entire Mau complex should illuminate these issues, which are of considerable importance for bird conservation in this and other East African forests

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Appendix

Pale-breasted Illadopsis *Trichastoma rufipennis*

An illadopsis caught on 15 February 1990 in disturbed forest at 2240 m, and photographed, described and released, was immediately recognized as different from the examples of the Mountain Illadopsis *T. pyrrhopterum* caught at other sites. Field notes were as follows:

> "Much browner than Mountain Illadopsis. Throat contrasting white. Upperparts including crown drab olivaceous brown. Cheeks greyer with olivaceous edges to feathers. Flanks, sides of chest, under tail coverts and lower belly similar to upperparts, slightly more olivaceous. Belly washed paler, not white. Centre of chest greyer, like cheeks, but with an olivaceous wash to tips so that grey not very clear. Eye brown, legs dark grey, toes yellowish-grey."

The main differences from Mountain Illadopsis were in the brown crown, brown sides of chest, paler grey central chest and conspicuously contrasting white throat. Its combination of characteristics appeared to fit no other Kenyan Illadopsis, a conclusion borne out by examination of specimens in the collection of the National Museums of Kenya. However, two specimens of *T. rufipennis* from Amani, East Usambaras, Tanzania (the endemic race *distans*) bore an extremely close resemblance to the captured bird. All characteristics were very similar except the colour of the lower belly, which was pale in the Tanzanian specimens and brownish in the Trans–Mara bird. Specimens of *rufipennis* from Kakamega have an indistinct brownish band across the chest, quite different from the Trans–Mara individual. The identification of the Trans–Mara Illadopsis as *T. rufipennis* seems justified on the basis of this examination, but must remain provisional in the absence of a specimen. Further study is required to establish its affinities and those of *T. rufipennis* from Ol Doinyo Orok (Bennun *et al.* 1986).

Additions to the East African avifauna

J.S. Ash, R.J. Dowsett and F. Dowsett-Lemaire

During a visit to the Bwamba lowlands (0°52N, 30°05E) and the Budongo Forest (1°45N, 31°35E) in western Uganda between 26 February and 5 March and 6–9 March 1990 respectively, five additions to the East African avifauna were recorded. Each species was seen and/or heard by various members of a party which included, in addition to the authors: M.A.C. Coverdale, T.M. Gullick and Dr A.D. Johns. Details of all five have been submitted for ratification to the East African Rarities Committee.

Three of the five species, Spot-breasted Ibis *Bostrychia rara*, White-throated Blue Swallow *Hirundo nigrita* and Ituri Batis *Batis ituriensis*, are recorded here. Two other species, Hartlaub's Duck *Pteronetta hartlaubi* and the Congo Serpent Eagle *Dryotriorchis spectabilis* are included in Dowsett & Dowsett-Lemaire (in prep.).

***Bostrychia rara* Spot-breasted Ibis**

On the first evening, 2 March, on which we camped in an area of *Cynometra* (ironwood) forest on the banks of the Kirimia River with its associated *Afromomum* swamps, JSA flushed two ibises from one such swamp. They were not seen well in the poor light at 19:40 hrs, and could not be identified specifically at the time. Fortunately they flew over the camp and were heard by the rest of the party, and their calls were tape-recorded by FD-L and TMG. They were clearly not Hadada *B. hagedash*, judging by their calls, and unlike Green Ibis *B. olivacea* heard recently by JSA in Nigeria. Two birds rose from the same site next evening, and again flew over the camp. Similar calls were twice heard later in the same evening, and again at 06:35 hrs on 5 March, but it was not known if more than the same two birds were involved. Further tape-recordings were made.

Dr A. Brosset (*in litt.*) stressed that *B. rara* and *B. olivacea* are practically impossible to distinguish by plumage and size in the field, and that voice is the best character for separation. Sonographic analysis of the recordings made by FD-L, and deposited with the EARC, clearly show that the Bwamba birds are *B. rara*: *rara* does not have the honking quality of *olivacea*; we have listened to tapes of both, the latter published by Keith & Ginn 1971); C. Chappuis' unpublished tape of *rara* presents one bird with a soft voice, a second much harsher, and both birds accentuating the second or third notes (cf. Brosset & Erard 1986). Both birds in Bwamba have identical, soft voices with the accent on the second to third notes. Chapin (1932) pointed out that compared to *olivacea*, *rara* stresses the second note, but this important point was overlooked by Brown *et al.* (1982). The crepuscular, even nocturnal, activity of these birds is also typical of *rara* rather than *olivacea* (Brosset & Erard *loc. cit.*).

According to the distribution map in Brown *et al.* (1982) *rara* occurs in West Africa eastwards through Zaïre to the border with Uganda along the Semliki River. The nearest record we have been able to trace is from Penge (1°23N, 28°06E) (Chapin 1932). Thus, its occurrence in Uganda was not unexpected.

***Hirundo nigrita* White-throated Blue Swallow**

A single bird glimpsed by JSA over the Semliki River at 09:00 hrs on 28 February was thought to have been this species. During a search for it downstream later in the day he found a pair and confirmed the identification. They were seen frequently during the next two days by all observers, as they used—in characteristic fashion—several perches on

branches projecting from submerged trees in the river. These perches were defended vigorously against other hirundines—Sand Martin *Riparia riparia* and Eurasian Swallow *H. rustica*—and several Blue-cheeked Bee-eaters *Merops persicus*, which approached them. A second pair was discovered by MACC about 1 km upstream on 1 March.

These small rather thick-set dark shining blue swallows, with noticeable small white throat patches, were seen very well. The very short square tail with white spots at the base of each feather, conspicuous above and below when fanned on landing or in banking, were clearly visible, as was the white throat patch, at over 100 m.

This is the first record for East Africa, but it is known from the Zaïre side of the Semliki, where it was seen at Beni (0° 28N, 29°28E) by Chapin (1932).

***Batis ituriensis* Ituri Batis**

Two pairs were found in Budongo Forest on 8 March at 800 m. The first pair was engaged in courtship feeding, and both birds were seen very well as they moved about in the branches of forest trees at 5–6 m above the ground (JSA, MACC). Both birds were similar with black breast bands, as one (presumed male) fed the other (presumed female) on a termite. Later in the day, with TMG, another pair was found in the same part of the forest.

The supraloral white spots led us to believe at first that they were Rwenzori Batis *B. diops*, with which we were familiar elsewhere in Uganda. Both had long white wing bars, lacked supercilia, and the whole of the crown and mantle were slate grey to black, with a pale patch on the nape or upper neck. No calls were heard.

The range of this species, formerly regarded as a race of *B. minima*, is restricted to northeastern Zaïre (Mackworth-Praed & Grant 1973), and is known from Iruma within 190 km to the west of the Ugandan locality (Chapin 1953).

Other species not present on the East African list but known from the eastern Ituri in Zaïre can be expected in western Uganda, and include the following known from the Zaïre side of the Semliki River: *Smithornis sharpei* Grey-headed Broadbill, *Psalidoprocne nitens* Square-tailed Rough-wing Swallow, *Criniger ndussumensis* White-bearded Greenbul, *Zoothera princei* Grey Ground Thrush, *Sylvietta denti* Lemon-bellied Crombec, *Platysteira tonsa* White-spotted Wattle-eye, *Dicrurus atripennis* Shining Drongo, and *Malimbus coronatus* Red-crowned Malimbe. Human pressure on Bwamba and the degraded nature of much of the forest stresses the need for competent and detailed surveys of the fauna and flora. One of our party, ADJ of the Makerere University Biological Field Station at Kibale, will be looking into this suggestion.

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Density and distribution of the Fish Eagle *Haliaeetus vocifer* on Lakes Naivasha and Oloiden, Kenya

Andrew C. Smart

The African Fish Eagle, *Haliaeetus vocifer* (Daudin), has been studied in the past at Lake Naivasha, with surveys in 1968–1973 (Brown & Hopcraft 1973), 1979 (Cambridge University Expedition 1979) and 1986 (Reading University Expedition 1986). This short study, carried out in July and August 1987 had three aims:

a. To determine the current distribution of the birds around the lake.
b. To consider whether a drop in lake level and recent changes in aquatic vegetation had altered the density or distribution of birds.
c. To investigate the North Swamp, an area where high concentrations of juveniles were recorded by Brown & Hopcraft (1973) and Reading University Expedition (1986), and to determine whether juveniles were present in greater densities than elsewhere on the lake.

Study area

Lake Naivasha (0°45'S, 36°20'E) is freshwater and lies in the Kenyan Rift Valley at an altitude of 1890 m above sea level (Harper 1984). Lake Naivasha and the adjacent (slightly saline) lake, Oloidien are affected by rapid and frequent lake level fluctuations. Both lakes formed in extinct volcanic craters, and to the southwest lies a smaller crater, Sonachi, which contains an alkaline crater lake.

At Naivasha the natural vegetation is a successional sequence from aquatic macrophytes and papyrus (*Cyperus papyrus* L.), through *Cassia* and *Tarchonanthus* scrub to *Acacia* woodland (Gaudet 1977). The lake level at Naivasha was dropping at the time of this study. Between July and September, the lake level fell approximately 1 m in depth, continuing a trend that had been taking place since 1982 (Åse 1987). This drop in lake level resulted in a loss of much of the aquatic macrophytes, and a change from clear water lagoons and floating papyrus of the 1970s to turbid open water fringing papyrus. Introduced *Salvinia molesta* Mitchell is found around all the shore of Lake Naivasha, and is particularly abundant in the North Swamp and against the fringing papyrus along the east shore (Fig. 1). An increase in the extent of agriculture around the lake shore, particularly in the north and south west of the lake was causing the shoreline habitat to change at the time of this study. The lake at Sonachi Crater has no fish and is surrounded with dense *Acacia* woodland.

Lake Naivasha has been developed as a fishery and contains various introduced fish species—tilapia, (*Tilapia zillii* Gervais, and *Oreochromis leucostictus* Trewavas), and large mouth bass, (*Micropterus salmoides* Lacépède), all of which were observed taken by *H.vocifer* during this study.

Methods

A census of the eagle population was undertaken by three boat surveys of both lakes. Adult *H.vocifer* are territorial and remain within their territories for 80–90 per cent of the day (Brown & Hopcraft 1973), decreasing the possibility of double counting the

same birds. The lake shore was divided into 15 sections (Fig. 1), each section being approximately 5 km of shoreline, apart from Crescent Island (10 km) and Oloidien (10 km). Each survey involved a complete circuit of both lakes over three and a half days. The survey of Lake Naivasha was carried out between 10:00 and 16:00 hrs and completed in three days, the census route commencing where the previous day had ended. The census of Oloidien Lake took place between 10:00 and 13:00 hrs on the final day of the survey.

The location of birds along the shoreline and the dominant vegetation type were recorded on maps of the area during each survey. Stationary birds or birds which took flight and flew behind the boat as it moved towards them were recorded. Birds taking flight were only recorded if they flew behind the boat so as to minimize the risk of double counting. Areas with a high density of *H.vocifer* (Oloidien Lake, Crescent Island and Oloidien Bay, Fig. 1) were also surveyed from the shore to confirm the values found from the boat survey, though only values from the boat survey were used in any analysis.

Brown & Hopcraft (1973) refer to the different plumage types for first and second year birds, sub-adults and adults. In this study, birds were defined as either 'adult' or 'juvenile'. The definition of 'juvenile' used included first and second year birds, while 'adults' included any sub-adults which were present. Sub-adults can be included with adults when estimating the number of territory-holding pairs, since sub-adults and adults will pair and hold territories around the lake, the sub-adult losing its place in the pair if an adult bird becomes available (Brown & Hopcraft 1973).

Two trips were made to the North Swamp (The area north of the North swamp shoreline section, Fig. 1), much of which was under agriculture, and the area around the Malewa River, (north of the Malewa Input shoreline section, Fig. 1) to determine whether juvenile birds were present in these areas some distance from the lake shore.

Results

Table 1 shows the numbers and locations of fish eagles recorded on each survey. Compilation of the results from three surveys produced an estimate of 82 territory-holding pairs on both Naivasha and Oloidien (Fig. 1). The territory-holding population on each lake was estimated as: Lake Naivasha—68 pairs; Oloidien—13 pairs; Sonachi—1 pair. The mean number of *H.vocifer* in each shoreline section was used to calculate the density per kilometre of shoreline of both the adult and juvenile population. Density was compared with the dominant vegetation type (Table 2, Fig. 2). A comparison of the density per km of shoreline of both adult and juvenile *H.vocifer* around the lake on a site by site basis over the three surveys produced a value of Kendall's Coefficient of Concordance, W, indicating that the three surveys produced significantly similar results (adult *H.vocifer*: $W = 0.657$, $\chi^2 = 27.59$, d.f. = 14, $P \leq 0.05$; juvenile *H.vocifer*: $W = 0.579$, $\chi^2 = 24.32$, d.f. = 14, $P \leq 0.05$).

A Kruskall-Wallis test was applied to data values for each site from all three surveys, comparing the seven vegetation types with the values for density per km lake shoreline. This indicated that a significant difference exists between density of *H.vocifer* in different vegetation zones for both adult birds ($H = 19.99$, d.f. = 6, $P \leq 0.01$) and juvenile birds ($H = 19.99$, d.f. = 6, $P < 0.01$) as defined by this study. Differences between densities in different vegetation types were determined by comparing all vegetation types using a Mann-Whitney test and significant differences are shown in Table 3.

The percentage of juveniles in the population was found to be 6.2 per cent (mean value from three surveys). Previous values for juvenile percentage of the population

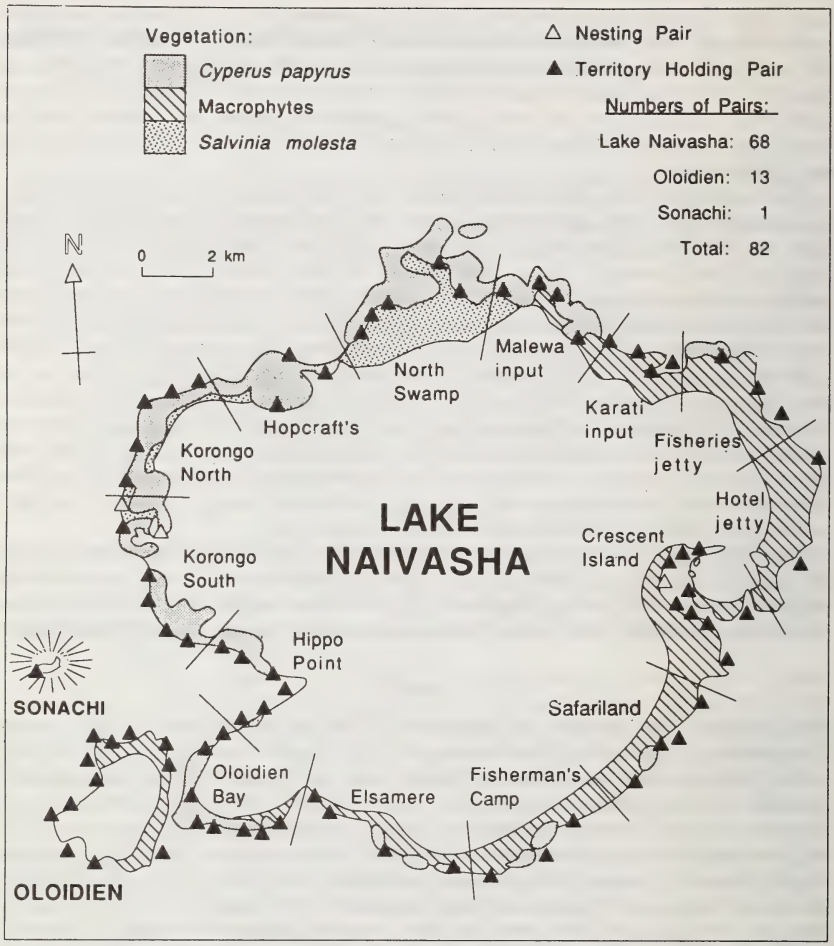

Fig. 1. *Map of Lake Naivasha, Kenya, showing position of territory-holding and nesting pairs of Fish Eagle* Haliaeetus vocifer *and vegetation zones*

were 15.6 per cent (Brown & Hopcraft 1973), 19.5 per cent (Cambridge University Expedition 1979) and 5.6 per cent (Reading University Expedition 1986). Three territories contained birds sitting on nests and one a nest with a juvenile. Two visits to the area of land now cleared and used for agriculture at the North Swamp produced no records of juvenile birds, though a number were seen in flight on one visit. Juveniles (3), one subadult and a pair of adults were located to the west of the Malewa River (North of the Malewa Input lakeshore section, Fig. 1). Investigation on the eastern side of the Malewa

Table 1. *Numbers of* H.vocifer *at Lake Naivasha, Kenya during three surveys in July and August 1987*

	29 July –1 Aug.		14–18 August		28–31 August	
Lake section (5 km)	Adult	Juvenile	Adult	Juvenile	Adult	Juvenile
Hotel jetty	4	2	4	0	3	0
Fisheries' jetty	7	0	5	0	7	0
Karati input	5	0	8	0	8	0
Malewa input	4	0	8	0	2	5
North Swamp	8	4	9	4	7	1
Hopcraft's	8	1	15	0	5	1
Korongo north	9	0	13	0	13	0
Korongo south	9	0	8	0	9	0
Hippo Point	9	1	13	0	9	0
Oloidien Bay	6	0	13	1	6	0
Elsamere	10	0	9	0	7	0
Fisherman's Camp	6	0	11	0	12	0
Safariland	6	0	4	0	7	0
Crescent Island (10 km)	15	1	21	1	21	3
Naivasha Total:	106	9	141	6	116	10
Oloidien (10 km)	27	2	27	1	21	0
Sonachi	2	0	2	0	2	1
Total:	135	11	170	7	139	11
	146		177		150	

was not undertaken because the area was unsafe to survey on foot, but the habitat was similar and would be expected to support some birds.

Records of the commercial catch on Lake Naivasha registered with the Kenyan Fisheries Department do not accurately represent the status of the fishery at any point in time because of changing mesh sizes and unknown levels of poaching. Official records do not exist for Oloidien Lake where poaching is minimal, but data from research carried out at Oloidien during 1986 and 1987 indicated fish numbers at Oloidien were increasing (S.M.Muchiri, unpublished data).

Discussion

H.vocifer numbers at Lake Naivasha had not altered from the previous year (Reading University 1986) with survey values of 115, 147, 126, compared with 144 in 1986. The estimated value of 68 pairs on Lake Naivasha compares with the 1968–1973 values for July-September of 114–172 individuals produced by Brown & Hopcraft (1973) and indicates that the birds were at similar densities at the same time of year in 1987. Brown & Hopcraft (1973) found numbers fluctuated with time of year even though birds breed throughout the year around the lake. The location of 51 pairs recorded by the Cambridge

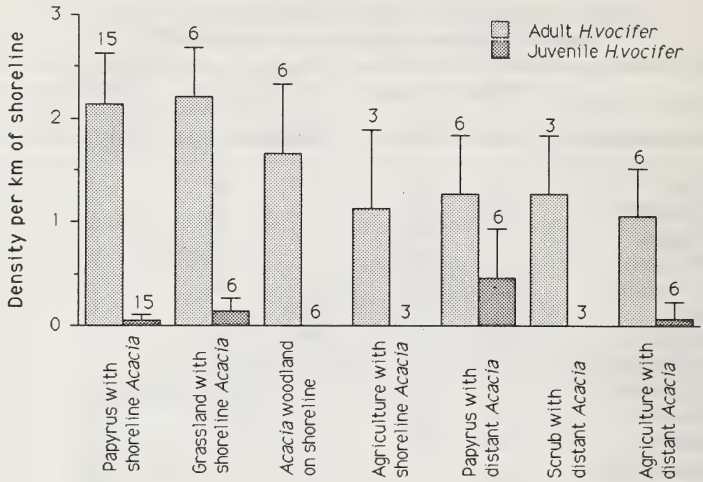

Fig. 2. *Variation in density of* H. vocifer *adults and juveniles per km of shoreline habitat in different vegetation types at Lake Naivasha, Kenya showing 95 per cent confidence limits*

Expedition on Lake Naivasha in 1979 suggested that no birds were holding territories between Fisheries' Jetty and Hopcraft's (Fig. 1), where a large area of papyrus reef (*Cyperus papyrus*) extended into the lake (I. Johnson, pers. comm.). This papyrus reef is no longer present and this stretch of shoreline, now fringed with papyrus and salvinia, supported an estimated 15 territory-holding pairs during 1987. The number of territories around the remainder of the lake has hardly altered; 51 pairs in 1979 and 53 pairs in 1987. The increase in territory-holding pairs of birds around Lake Naivasha between 1979 and 1987 may be associated with the change in habitat along the north lake shore. This may be an increase in preferred habitat, enabling more pairs to establish territories. Alternatively, the loss of the papyrus reef may enhance the ability of boat surveys to census territory-holding pairs. If the latter is true, it would suggest no 'real' increase in numbers since 1979.

The distribution of adult *H.vocifer* around the lake relative to habitats (Tables 2 and 3, Fig. 2) indicate that papyrus fringe with shoreline *Acacia* and grassland and shoreline *Acacia* have significantly higher adult densities than other vegetation types and that *Acacia* woodland is also important. The current loss of fringing papyrus for agriculture may lead to problems in the future if this small sample is representative of the density of birds expected in such a habitat. Other vegetation types are not significantly different from each other suggesting that the presence of shoreline *Acacia* is important in habitats other than agricultural land. Brown (1980) suggests that the population around Naivasha is not restricted by lack of breeding sites, with pairs taking up territories as non-breeders. It may be that the presence of perches at the lake shore within territories is an important factor in determining density of birds. Juvenile densities are significantly higher in areas with grassland and shoreline *Acacia* and in areas with papyrus and dis-

Table 2. *Density of* H.vocifer *per km of lake margin relative to vegetation on shoreline at Lake Naivasha, Kenya July–August 1987*

		Density of *H.vocifer* per km shoreline					
		29 Jul–1 Aug		14–18 Aug		28–31 Aug	
Main vegetation type (see Fig. 1)	Lake section	Ad	juv.	Ad	juv.	Ad	juv
Grassland with shoreline *Acacia*							
	Oloidien	2.7	0.2	2.7	0.1	2.1	0
	Crescent Island	1.5	0.2	2.1	0.1	2.1	0.3
Papyrus with shoreline *Acacia*							
	Korongo north	1.8	0	2.6	0	2.6	0
	Hopcrafts	1.6	0.2	3	0	1	0.2
	Hippo Point	1.8	0.2	2.6	0	1.8	0
	Oloidien Bay	1.2	0	2.6	0.2	1.2	0
	Korongo south	1.8	0	1.6	0	1.8	0
Acacia woodland on shoreline							
	Fisherman's Camp	1.2	0	2.2	0	2.4	0
	Elsamere	2	0	1.8	0	1.4	0
Agriculture with shoreline *Acacia*							
	Safariland	1.2	0	0.8	0	1.4	0
Papyrus with distant *Acacia*							
	North Swamp	1.6	0.8	1.8	0.8	1.6	0.2
	Malewa input	0.8	0	1.6	0	0.4	1
Scrub with distant *Acacia*							
	Fisheries' jetty	1.4	0	1	0	1.4	0
Agriculture with distant *Acacia*							
	Karati input	1	0	1.6	0	1.6	0
	Hotel jetty	0.8	0.4	0.8	0	0.6	0

tant *Acacia* (Table 3b). The high density of juveniles in grassland and shoreline *Acacia* habitat (Crescent Island and Oloidien) may be a result of particularly high concentrations of adult eagles in these areas. The high density of juveniles in areas with papyrus and distant *Acacia* coupled with the recording of birds in habitat away from the lake shore underlines the continued importance of the North Swamp and the area around the input of the Malewa River for juvenile *H.vocifer.*

The difference in habitat preference for juveniles, in particular the high numbers in areas with papyrus and distant *Acacia*, is of interest and warrants further study of interactions between adult and juvenile birds. The numbers of juveniles recorded during this study was low and as such no real indication of competition could be concluded.

H.vocifer density at Oloidien showed an increase, with 13 pairs in 1987 compared to 8 pairs recorded in 1979 (I. Johnson, pers. comm.). The fish population at Oloidien was higher than previous years during 1987, (S.M.Muchiri, pers. comm.) and a large number of flamingos Phoenicopteridae, predated by *H.vocifer*, were present. The increase in territory-holding *H.vocifer* at Oloidien may be related to prey density. The pair at Sonachi (Crater Lake) also prey on the flamingos present at this saline lake which

Table 3. *Significant differences between density of adult and juvenile* H. vocifer *in different habitat types from Mann-Whitney U tests between habitats*

Adult

	AS	SD	AD	AW	PD	PS
GS	**	**	**	NS	**	NS
PS	*	*	**	NS	*	
PD	NS	NS	NS	NS		
AW	*	NS	NS			
AD	NS	NS				
SD	NS					

Juvenile

	AS	SD	AD	AW	PD	PS
GS	*	*	*	**	NS	*
PS	NS	NS	NS	NS	*	
PD	*	*	*	*		
AW	-	-	NS			
AD	NS	NS				
SD	-					

Key: AS: agriculture with *Acacia* on shoreline; SD: scrub with distant *Acacia*; AD: agriculture with distant *Acacia*; AW: *Acacia* woodland on shoreline; PD: papyrus with distant *Acacia*; PS: papyrus with shoreline *Acacia*; GS: grassland with shoreline *Acacia*

contains no fish. The apparent constancy of numbers of *H.vocifer* during the recent period of falling water level at Naivasha suggests that the population has been able to cope with changes in aquatic vegetation and the fluctuations of the fishery. The present removal of much of the fringing papyrus and the clearance of the North Swamp may have a more damaging effect on numbers, and monitoring should be continued in the future.

Acknowledgements

This work was carried out by the University of Leicester Lake Naivasha Project (Research Permit No. OP.13/001/12C 46), issued by the Office of the President of the Republic of Kenya. The author would like to thank the Kenya Government; the numerous organizations who funded the project; and the volunteers who helped during the surveys. Full acknowledgements are listed in the final report of the University of Leicester, Lake Naivasha Vertebrate Survey 1987. Thanks also to Dr I. Johnson for information regarding the 1979 and 1986 surveys, Mr S.M. Muchiri of the Kenyan Fisheries Department and colleagues at Leicester, particularly Mr I.P.F. Owens, and two anonymous reviewers for their comments on the manuscript.

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Scopus 14: 76–83, May 1991 Received 25 June 1990

Request for information

We are preparing an atlas of the breeding birds of Madagascar. This project will be based on surveys of museum collections, relevant literature, unpublished observations, and investigations of poorly known areas. The end product will be a comprehensive atlas of the distribution of Madagascar birds.

We are requesting information on holdings of Madagascar birds in small museums and private collections. We would also appreciate receiving unpublished notes, observations, or other suitable material on the birds of Madagascar. Contributions will be fully acknowledged. Steven M. Goodman and Thomas S. Schulenberg, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605, USA, (telephone (312) 922-9410); Olivier Langrand and Lucienne Wilmé, WWF Aires Protégées, B.P. 738, Antananarivo (101), Madagascar.

Please address all communications to Goodman and Schulenberg.

Correction

In the paper on Indian House Crows *Corvus splendens* by Dr Colin Ryall (*Scopus* 14: 14–16), the first sentence of the penultimate paragraph on p. 14 should read:

> The first nest collection of 18 November 1985 at Makadara Park, a small paved park in the Mombasa town centre, and the second on 1 November 1985 at Mzimle, a large area of grassy parkland with numerous trees in the less crowded periphery of Mombasa Island.

Taxonomic notes on some East African birds.
Part I — Non-passerines

D.A. Turner, D.J. Pearson and D.A. Zimmerman

As a preliminary to the publication of a Revised list of the birds of East Africa (EANHS Ornithological Sub-Committee in prep.), and a *Field guide to the birds of Kenya* (Zimmerman, Turner & Pearson in prep.), it has become necessary to review fully the scientific nomenclature used by Britton (1980). Many publications which have appeared since 1980 have involved taxonomic revisions of many African bird groups. In making our recommendations we have tried to take all such published opinions into account. We have also relied on our own field observations in East Africa, together with the experience of colleagues here and elsewhere on the African continent.

We list below, giving brief background, all those cases where we recommend a change from Britton (1980). The English names used here are those we now prefer, and in some cases these differ from those in Britton. The names used by Britton are given on the right in square brackets.

Oceanitidae storm-petrels **[Hydrobatidae]**
We follow Condon (1975), Brooke & Sinclair (1978), Clancey (1980), and Harrison (1983) in recognizing the Oceanitidae.

***Sula capensis* Cape Gannet** **[*Sula bassana* Gannet]**
We agree with Clancey (1980), Brown *et al.* (1982), Harrison (1983), and Sibley & Monroe (1990) in recognizing *capensis* as specifically distinct from *bassana*.

***Necrosyrtes monachus* Hooded Vulture** **[*Neophron monachus*]**
Brown & Amadon (1968) reviewed evidence for placing this species in a monotypic genus. This course was followed by Voous (1973), Clancey (1980), Dowsett & Dowsett-Lemaire (1980), Brown *et al.* (1982), Amadon & Bull (1988) and Sibley & Monroe (1990). We too prefer to recognize the monotypic *Necrosyrtes*.

***Polyboroides typus* African Harrier-Hawk** **[*Polyboroides radiatus* Harrier Hawk]**
We agree with Snow (1978), Clancey (1980), Brown *et al.* (1982), Amadon & Bull (1988) and Sibley & Monroe (1990) in recognizing mainland African birds as *typus*. Madagascar birds (*radiatus*), considered by some to be specifically distinct, are probably best treated as conspecific with *typus* as suggested by Dowsett & Dowsett-Lemaire (1980).

***Buteo oreophilus* Mountain Buzzard** **[*Buteo tachardus*]**
James & Wattel (1983) argue that Brooke (1974) was in error in recognizing *tachardus*, and they strongly recommend that *oreophilus* should stand for this species. We agree that East African birds are best treated as nominate *oreophilus*, following Brown *et al.* (1982), Amadon & Bull (1988) and Sibley & Monroe (1990).

***Spizaetus africanus* Cassin's Hawk-Eagle** **[*Hieraaetus africanus*]**
We follow Snow (1978), Brown *et al.* (1982), Amadon & Bull (1988) and Sibley & Monroe (1990) in placing this forest eagle in *Spizaetus*.

Hieraaetus ayresii **Ayres' Hawk-Eagle** [***Hieraaetus dubius*** **Ayres' Hawk Eagle]**
Brooke & Vernon (1981) show convincingly that *dubius* was based on a specimen of *H. pennatus*, and urge everyone to revert to *ayresii*. This is now widely accepted by most recent authorities including Clancey (1980), Dowsett & Forbes-Watson (in press), Amadon & Bull (1988) and Sibley & Monroe (1990). We fully support this change.

Micronisus gabar **Gabar Goshawk** [***Melierax gabar***]
We follow Snow (1978), Clancey (1980) and Brown *et al.* (1982) who accept the evidence given by Smeenk & Smeenk-Enserink (1975) for placing this species in the monotypic genus *Micronisus*.

Pandioninae Osprey **[Pandionidae Osprey]**
We follow Brown *et al.* (1982), Amadon & Bull (1988) and Sibley & Monroe (1990) in recognizing the subfamily Pandioninae, within the Accipitridae.

Coturnix adansonii **Blue Quail** [***Coturnix chinensis***]
Although considered conspecific by Snow (1978) and Crowe (in Urban *et al.* 1986), we prefer to follow Mackworth-Praed & Grant (1952), Devilliers (1976), Clancey (1980) and Sibley & Monroe (1990) in keeping the African form *adansonii* distinct from the very different-looking Asian *chinensis*.

Guttera pucherani **Crested Guineafowl** [***Guttera pucherani*** **Kenya Crested Guineafowl]**
Crowe (1978) regarded *G. pucherani* and *G. edouardi* as conspecific, based on intergradation in captivity and in the wild. We note that Clancey (1980), Urban *et al.* (1986) and Sibley & Monroe (1990) follow Crowe, and since both forms occur on the same ground in central Kenya where interbreeding may account for some racially indeterminate, possibly hybrid birds (Taylor & Taylor 1988), we fully support their view.

Bugeranus carunculatus **Wattled Crane** [***Grus carunculatus***]
Balearica pavonina **Black Crowned Crane** [***Balearica pavonina gibbericeps*** **Crowned Crane]**
Balearica regulorum **Grey Crowned Crane** [***Balearica pavonina ceciliae*** **Crowned Crane]**
Walkinshaw (1973) and The International Crane Foundation have revised the taxonomy and English names for all cranes, a revision recently used by Urban *et al.* (1986) and Urban (1988), and Sibley & Monroe (1990) and we propose to follow suit. The Wattled Crane is placed in a monotypic genus and the two crowned cranes are given specific status.

Amaurornis flavirostris **Black Crake** [***Limnocorax flavirostris***]
We follow Olson (1973), Snow (1978), Clancey (1980), Urban *et al.* (1986) and Sibley & Monroe (1990) in placing this species in *Amaurornis*.

Aenigmatolimnas marginalis **Striped Crake** [***Porzana marginalis***]
Olson (1973) proposed placing this crake in the monotypic genus *Aenigmatolimnas*. This was later followed by Snow (1978), Clancey (1980), Urban *et al.* (1986) and Sibley & Monroe (1990). We also note that additional supporting reasons for the move were given by Dowsett & Dowsett-Lemaire (1980). We support the use of *Aenigmatolimnas*.

Ardeotis arabs **Arabian Bustard** [***Otis arabs***]
Ardeotis kori **Kori Bustard** [***Otis kori***]
Collar, Goriup & Osborne (in Urban *et al.* 1986) point out that the genus *Ardeotis* is

distinct in structure and plumage from *Otis*, and place both Arabian and Kori Bustards in *Ardeotis*, as did Voous (1973), Clancey (1980) and Sibley & Monroe (1990). We fully support the change.

***Eupodotis cafra* White-bellied Bustard** **[*Eupodotis senegalensis*]**
We follow Goriup (Bustards of the world, in press) who, in determining that the form *erlangeri* is merely the juvenile plumage of *canicollis*, argues that *senegalensis* should be considered synonymous with the southern African form *cafra*. Thus the taxon in East Africa becomes *E. cafra canicollis*.

***Pluvialis fulva* Pacific Golden Plover** **[*Pluvialis dominica* Lesser Golden Plover]**
Connors (1983) pointed out that there was no evidence to show that this and *P. dominica* were conspecific where the two overlap in Alaska. Hayman *et al.* (1986) keep the two species separate, a move accepted by many, including ourselves.

***Phalaropus* spp. phalaropes** **[Phalaropidae]**
We follow Hayman *et al.* (1986), Urban *et al.* (1986) and Sibley & Monroe (1990) in placing phalaropes in the Scolopacidae and not as a separate family as in Britton (1980).

***Columba iriditorques* Western Bronze-naped Pigeon** **[*Columba malherbii*]**
We follow Goodwin (1967, and in Snow 1978) as well as Urban *et al.* (1986) and Sibley & Monroe (1990) in recognizing *iriditorques* for mainland western birds and *malherbii* for those from the Gulf of Guinea. We also note with interest the comments by Dowsett & Dowsett-Lemaire (1980) regarding close similarities in the voices of *iriditorques* and *delegorguei*, but until the voice of *malherbii* is studied we prefer to consider all three taxa as separate species.

***Treron calva* African Green Pigeon** **[*Treron australis* Green Pigeon]**
Goodwin (1967, and in Snow 1978) treated African mainland birds as *T. calva*, keeping separate the island forms on Pemba and Madagascar as *pembae* and *australis* respectively. This treatment of mainland birds was subsequently followed by Clancey (1980), Urban *et al.* (1986) and Sibley & Monroe (1990) and we fully support it.

The Pemba bird appears to be closely related to the birds on Madagascar and the Comoros, and for the time being we prefer to retain it as an endemic race of *australis* (*T. a. pembaensis*). Further field studies on Pemba are strongly recommended.

***Tauraco schalowi* Schalow's Turaco** **[*Tauraco livingstonii* Livingstone's Turaco]**
Snow (1978) treated the *T. persa* superspecies as consisting of five closely related species, as too did White (1965). Clancey (1980), however, placed *livingstonii* and *schalowi* in *corythaix*, while Fry *et al.* (1988) recognized only three species in this group. Meanwhile, Dowsett-Lemaire & Dowsett (1988), in discussing the vocalizations of the *T. persa* superspecies, convincingly proposed that *T. schalowi* be recognized as a distinct species, thus making a superspecies of six. Sibley & Monroe (1990) also recognize both *schalowi* and *livingstonii*, a change we fully support.

***Oxylophus jacobinus* Black and White Cuckoo** **[*Clamator jacobinus*]**
***Oxylophus levaillantii* Levaillant's Cuckoo** **[*Clamator levaillantii*]**
Irwin (in Fry *et al.* 1988) separated *Oxylophus* from *Clamator* for these two species on the grounds of their substantially different plumage and radically different wing shape. These two species also have all-black morphs, a condition which does not occur in *Clamator glandarius*. We support Irwin's views, as do Sibley & Monroe (1990).

Cuculus poliocephalus **Asian Lesser Cuckoo** [***C. p. poliocephalus*** **Lesser Cuckoo]**
Cuculus rochii **Madagascar Lesser Cuckoo** [***C. p. rochii*** **Lesser Cuckoo]**
Dowsett & Dowsett-Lemaire (1980) recommended that *rochii* be considered a distinct species on the basis of its voice, which is quite different from *poliocephalus*. Subsequently, Fry *et al.* (1988) treated them as separate species, while Becking (1988) discussed in detail the taxonomic status of *rochii*, also deeming it a species separate from the Asian *poliocephalus*. We support these views.

Centropodidae coucals **[Cuculidae, Centropinae]**
We follow Sibley & Monroe (1990) in recognizing coucals at the family level, and being sufficiently distinct from their previous position as a subfamily within the Cuculidae. All species within the genus *Centropus* are included in this new assemblage, while the Yellowbill *Ceuthmochares aereus* is placed in the subfamily Coccyzinae. Britton (1980) used the subfamily name Phoenicophaeinae to house this bird within the Cuculidae.

Bubo poensis **Fraser's Eagle-Owl** **[Fraser's Eagle Owl]**
Bubo vosseleri **Usambara Eagle-Owl** [***Bubo poensis vosseleri*** **Nduk Eagle Owl]**
Collar & Stuart (1985) treat *vosseleri* as a distinct species, endemic to the Usambara Mountains in northeastern Tanzania. White (1974) appears to be the only person to have heard both *poensis* and *vosseleri* in the wild, noting their calls "similar, but significantly different." In view of the vast distance separating *poensis* from *vosseleri*, and the long isolation of the latter in the Usambaras, we agree with Collar & Stuart and prefer to treat *vosseleri* as a distinct species.

Strix woodfordii **African Wood Owl** [***Ciccaba woodfordii***]
Colston (in Snow 1978) placed this species in *Strix*, perhaps following the conclusion of Voous (1964) that *Ciccaba* was probably not recognizably distinct. Subsequently Clancey (1980), Fry *et al.* (1988) and Sibley & Monroe (1990) have all followed suit, a move we fully support.

Otus scops **Eurasian Scops Owl** [***Otus scops scops*** **and** ***turanicus*** **Scops Owl]**
Otus senegalensis **African Scops Owl** [***Otus scops senegalensis***, ***nivosus***, **and** ***pulchellus*** **Scops Owl]**
Marshall (1978) and Chappuis (1978) both proposed that *senegalensis* be considered a separate species on the basis of vocal differences from *O. scops*, a view supported by Dowsett & Dowsett-Lemaire (1980) and Clancey (1980). Although Fry *et al.* (1988) preferred to retain *senegalensis* in *scops*, Sibley & Monroe (1990) have treated them as separate species, an arrangement we ourselves favour.

Caprimulgus pectoralis **Fiery-necked Nightjar** [***Caprimulgus pectoralis fervidus*** **Fiery-necked Nightjar]**
Caprimulgus nigriscapularis **Black-shouldered Nightjar** [***Caprimulgus pectoralis nigriscapularis*** **Fiery-necked Nightjar]**
We follow Fry (1988) and Sibley & Monroe (1990) in separating *nigriscapularis* from *pectoralis* on the basis of some vocal differences. Habitat preference may also be a major factor as well: *nigriscapularis* prefers non-forested habitat in areas of much higher rainfall than favoured by *pectoralis*.

Caprimulgus poliocephalus **Montane Nightjar** **[Abyssinian *in* Montane Nightjar]**
Caprimulgus ruwenzorii **Ruwenzori Nightjar** **[*in* Montane Nightjar]**
Caprimulgus guttifer **Usambara Nightjar** **[Usambara *in* Montane Nightjar]**
Although treated as separate species by Mackworth-Praed & Grant (1952), Snow (1978) considered them conspecific, a view followed by Britton (1980). Later on, Chappuis (1981) separated *ruwenzorii* from *poliocephalus* because of its different call, a point further emphasized by Fry (1988). In addition, it has a totally different tail pattern from *poliocephalus*. While agreeing that *ruwenzorii* should be treated separately for the reasons shown above, we also feel that the same reasoning should be applied to *guttifer*, which both Fry (1988) and Sibley & Monroe (1990) place in *poliocephalus*. It is a bird of montane grasslands adjacent to areas of highland forest, it too has some vocal differences from the other two, and again has a different tail pattern with only a small amount of white on the outer tail feathers compared to the all-white outers in *poliocephalus* and the at least half-white outers of *ruwenzorii*. We recommend that field studies of all three species be undertaken to help determine their true affinities.

Merops nubicus **Northern Carmine Bee-eater** **[Carmine Bee-eater]**
Merops nubicoides **Southern Carmine Bee-eater** **[*Merops nubicus nubicoides*]**
Although considered conspecific by Fry (1988), we prefer to follow Clancey (1980) and Sibley & Monroe (1990) in treating *nubicoides* as specifically distinct.

Upupa epops **Eurasian Hoopoe** **[*Upupa epops* Hoopoe]**
Upupa africana **African Hoopoe** **[*Upupa epops* Hoopoe]**
We follow Sibley & Monroe (1990) in regarding the African form *africana* specifically distinct from the northern *epops*.

Phoeniculus damarensis **Violet Wood Hoopoe** **[*Phoeniculus granti*]**
We follow Snow (1978), Fry *et al.* (1988) and Sibley & Monroe (1990) in regarding *granti* as conspecific with *damarensis*. The taxon in eastern Africa now becomes *P. damarensis granti*.

Phoeniculus purpureus **Green Wood Hoopoe**
Phoeniculus somaliensis **Black-billed Wood Hoopoe** **[*Phoeniculus purpureus somaliensis*]**
We follow Snow (1978), Fry *et al.* (1988) and Sibley & Monroe (1990) in treating *somaliensis* as specifically distinct from *purpureus*.

Rhinopomastus cyanomelas **Scimitarbill** **[*Phoeniculus cyanomelas*]**
Rhinopomastus aterrimus **Black Scimitarbill** **[*Phoeniculus cyanomelas*]**
Rhinopomastus minor **Abyssinian Scimitarbill** **[*Phoeniculus minor*]**
Ligon & Ligon (1978), noting that scimitarbills were not communal birds as were the wood hoopoes, considered them in the genus *Rhinopomastus*, as did many earlier authors (Jackson 1938, Chapin 1939, Mackworth-Praed & Grant 1952). More recently, following DNA-DNA hybridization studies, Sibley & Monroe (1990) separated scimitarbills at the family level, proposing the new name Rhinopomastidae. While we agree that there are substantial differences between the two groups, we prefer, for the time being, to retain the genus *Rhinopomastus* within the Phoeniculidae. We also follow Fry *et al.* (1988) and Sibley & Monroe (1990) in recognizing *aterrimus* as a distinct species.

Bucorvidae ground hornbills **[Bucoracinae in Bucorvidae]**
We follow Sibley & Monroe (1990) in recognizing the two species of ground hornbill *Bucorvus* spp.as constituting a family.

Lybiidae African barbets **[Capitonidae barbets]**
We follow Sibley & Monroe (1990) whose DNA studies have shown that African barbets are clearly distinct from both Asian and New World forms. We support this change and recognize the family Lybiidae.

Stactolaema leucotis* White-eared Barbet** [Buccanodon leucotis***]
Stactolaema whytii* Whyte's Barbet** [Buccanodon whytii***]
Stactolaema olivacea* Green Barbet** [Buccanodon olivacea***]
We follow Short & Horne (in Fry *et al.* 1988) and Sibley & Monroe (1990) in recognizing *Stactolaema*, and in removing the above three species from *Buccanodon.*

Tricholaema hirsuta* Hairy-breasted Barbet** [Lybius hirsutus***]
Tricholaema diademata* Red-fronted Barbet** [Lybius diadematus***]
Tricholaema frontata* Miombo Pied Barbet** [Lybius frontatus***]
Tricholaema lacrymosa* Spotted-flanked Barbet** [Lybius lacrymosus***]
Tricholaema melanocephala* Black-throated Barbet** [Lybius melanocephalus***]
We follow Short & Horne (1985, and in Fry *et al.* 1988) and Sibley & Monroe (1990) in recognizing *Tricholaema* and in removing the above five species from *Lybius*. We note that *lacrymosa*, and not *lachrymosa*, is the correct spelling.

[*Indicator narokensis* Kilimanjaro Honeyguide]
Short & Horne (1985, and in Fry *et al.* 1988) comment that this form (based on an immature bird taken at Ol Donyo Orok) is indistinguishable from the type of *I. meliphilus*, which was also an immature. Thus *narokensis* is a synonym of *I. meliphilus*. We accept this view and recommend that *narokensis* be deleted from the East African list.

***Campethera abingoni* Golden-tailed Woodpecker**
Campethera mombassica* Mombasa Woodpecker** [Campethera abingoni mombassica***]
Clancey (1988) and Short (in Fry *et al.* 1988) are both of the opinion that the form *mombassica* should be considered specifically distinct from *abingoni*, although hybrids between *mombassica* and *C. abingoni suahelica* may occur in some areas. Both forms, however, do occur near Kilimanjaro with no trace of hybridization, and we therefore follow Short (*op. cit.*) and Sibley & Monroe (1990) in treating *mombassica* as a separate species.

Dendropicos namaquus [***Thripias namaquus***]
Dendropicos xantholophus* Yellow-crested Woodpecker** [Thripias xantholophus***]
Dendropicos elliotii* Elliot's Woodpecker** [Mesopicos elliotii***]
Dendropicos goertae* Grey Woodpecker** [Mesopicos goertae***]
Dendropicos griseocephalus* Olive Woodpecker** [Mesopicos griseocephalus***]
We follow Short (in Snow 1978, 1982, and in Fry *et al.* 1988). Those species previously placed in *Thripias* and *Mesopicos* are considered closely related to the *fuscescens* group, and are now included in *Dendropicos*. We also note that Sibley & Monroe (1990) do likewise.

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Palaearctic and Afrotropical ducks and geese at Gaferssa Reservoir, Ethiopia, 1964–1970

Emil K. Urban

Distribution of ducks and geese in Ethiopia has been dealt with by several authors (Ash 1977, Malcolm 1982, Urban 1970, Urban *et al.* 1976, Woodman 1944, 1945). Detailed published information on numbers of ducks and geese in Ethiopia, however, is almost non-existent.

From 13 October 1964 to 11 January 1970 I recorded species and numbers of ducks and geese at Gaferssa Reservoir (9° 03'N, 38°31'E), a highland reservoir 17–25 km west of Addis Ababa, at an elevation of 2585 m. During this period the reservoir was 8 km^2 (8 x 1 km) in size and 10–20 m deep, surrounded by highland grasslands, cultivated fields and eucalyptus groves. The water level of the reservoir varied by 2 m or more due to the seasonal rains which fall from June to September ('big' rains) and any time between January and April ('small' rains). The area receives 150 cm or more of rain annually.

I made 101 trips to the reservoir, usually between 09:00–12:00 hrs, including weekly trips from 2 January 1965 to 22 May 1966; biweekly or sometimes weekly trips from 13 June 1966 to 15 January 1968; and monthly trips thereafter until 11 January 1970. I was able to view all portions of the reservoir from the Addis Ababa–Ambo road which runs along its entire north side. Using 10 x 50 binoculars and a 20x telescope, I recorded all ducks and geese present at the reservoir during each visit. Because of the difficulty of separating non-breeding (especially female) Common Teal *Anas crecca* from Garganey *A. querquedula*, I combined their numbers when I made my observations. Because I was not in Ethiopia for parts of July and August of some years, I had insufficient data to determine average yearly numbers of Afrotropical species at Gaferssa. Palaearctic species, however, are not in Ethiopia during these months and I did calculate average yearly numbers for them.

I recorded the following Afrotropical species: Fulvous Tree Duck *Dendrocygna bicolor*, Blue-winged Goose *Cyanochen cyanopterus*, Egyptian Goose *Alopochen aegyptiacus*, Spur-winged Goose *Plectopterus gambensis*, Knob-billed Goose *Sarkidiornis melanotis*, Yellow-billed Duck *Anas undulata*, African Black Duck *A. sparsa*, Southern Pochard *Netta erythrophthalma* and Maccoa Duck *Oxyura maccoa*. Of these, Blue-winged Goose, Egyptian Goose and Yellow-billed Duck were the most common while the others were rare to uncommon.

The most common Palaearctic species were Eurasian Wigeon *Anas penelope*, Common Teal *A. crecca*, Northern Pintail *A. acuta*, Garganey *A. querquedula* and Northern Shoveler *A. clypeata*. Also recorded were Ruddy Shelduck *Tadorna ferruginea*, Gadwall *Anas strepera*, Common Pochard *Aythya ferina*, Ferruginous Duck *A. nyroca* and Tufted Duck *A. fuligula*; these species, however, were rare to uncommon.

Afrotropical species

Fulvous Tree Duck Two were recorded on 24 October 1965.

Blue-winged Goose Although this goose was recorded at Gaferssa in all months of the year (Table 1), it was most numerous in the big rains and least common in the dry

Table 1 *Average numbers of wildfowl most commonly recorded by month, 1964–1970, Gaferssa Reservoir, Ethiopia*

Month:	J	F	M	A	M	J	J	A	S	O	N	D
Afrotropical species												
Blue-winged Goose	3	6	5	9	8	48	57	154	64	25	12	4
Egyptian Goose	1064	1126	895	898	643	425	394	241	23	100	447	700
Yellow-billed Duck	122	124	·180	160	108	37	0	3	7	17	31	42
Palaearctic species												
Eurasian Wigeon	56	28	12	7	0	0	0	0	0	5	25	24
Common Teal and Garganey	175	245	99	8	0	0	0	0	0	24	157	149
Northern Pintail	76	25	37	7	1	0	0	0	0	11	8	24
Northern Shoveler	15	4	8	12	9	8	3	1	0	11	14	24
Common Pochard	7	11	3	1	0	0	0	0	0	1	3	10
Tufted Duck	2	2	4	4	0	0	0	0	2	0	3	6

season, usually December to March. Largest numbers recorded were 190 on 22 August 1965, 160 on 14 August 1965, 170 on 14 August 1968 and 127 on 30 June 1968. Smallest numbers were two on 30 January 1965, 24 November 1966 and 16 December 1968, three on 28 November 1965, and four on 15 February 1965 and 10 December 1965. The seasonal differences in numbers reflect this goose's seasonal movements: in the dry season it usually is found nesting in alpine moorlands and valleys up to and sometimes above 4500 m, while in the big rains it moves downwards several hundred metres in elevation to highland lakes where it congregates in large numbers and undergoes moult at the peak of the big rains in August.

Egyptian Goose This was the most common species of wildfowl at Gaferssa during the period. It was recorded in all months, but was most common at the height of the dry season in January and February and least common at the end of the rains and beginning of the dry season in September and October (Table 1). The largest numbers recorded were 1350 on 30 January 1965, 1525 on 15 February 1965 and 1416 on 15 February 1966, while the fewest seen were five on 17 September 1965 and 36 on 3 October 1965. Numbers of this goose increase at highland lakes as the marshes dry up in the dry season.

Spur-winged Goose One individual was seen on 22 August 1965.

Knob-billed Duck This species was uncommon. The only numbers recorded were five on 14 January 1966, 11 on 27 March 1965, six on 6 June 1965, 18 on 20 June 1965, five on 27 June 1965, two on 10 July 1965, five on 25 July 1965, eight on 22 August 1965 and two on 17 September 1965. This duck may be nomadic in the Ethiopian highlands during the big rains.

Yellow-billed Duck This duck was common at Gaferssa at the height of the dry season, then rare to absent in the big rains (Table 1). Largest numbers recorded were 232 on 7 January 1966, 234 on 28 March 1967, 247 on 10 April 1966 and 169 on 9 May 1966. It

Table 2 *Average numbers of common Palaearctic ducks recorded at Gaferssa Reservoir, Ethiopia, 1965–69, during the months October to April*

Palaearctic winter/ Species	O	N	D	J	F	M	A	Average for all months October to April
Eurasian Wigeon								
1965–66	0	34	34	57	12	18	27	26.0
1966–67	19	49	5	22	5	14	0	16.3
1967–68	12	20	65	0	22	0	0	17.0
1968–69	1	28	37	13	109	0	0	26.4
Northern Pintail								
1965–66	9	13	13	68	87	20	10	31.4
1966–67	0	2	21	43	61	23	3	21.9
1967–68	35	2	62	181	53	130	13	68.0
1968–69	11	0	10	21	0	0	0	6.0
Northern Shoveler								
1965–66	15	29	37	20	9	11	16	19.6
1966–67	15	23	20	5	1	10	4	11.1
1967–68	12	2	22	58	10	8	0	16.0
1968–69	10	15	2	0	0	0	0	3.9
Common Pochard								
1965–66	0	12	32	24	33	9	5	16.4
1966–67	2	2	6	9	8	0	0	3.9
1967–68	0	0	1	2	6	8	0	2.4
Tufted Duck								
1965–66	1	7	16	4	3	6	6	6.1
1966–67	0	10	6	3	0	0	1	2.9
1967–68	0	0	0	1	6	8	0	2.1

became less numerous at the start of the big rains towards the end of May and June with none recorded in July, one to nine in August and seven in September. Numbers then built up beginning in October and reached a peak in the dry season in January to April. The Yellow-billed Duck has been recorded nesting in highland marshes June to December.

African Black Duck This species, seen typically in highland rivers, was rare at Gaferssa. One individual was seen on 14 and 22 August 1965 and 11 August 1968 and two on 8 November 1964.

Southern Pochard This species was rare to uncommon at Gaferssa. Six were seen in February 1965 and 1966, one on 21 April 1968, two on 22 August 1965 and two in November 1965.

Maccoa Duck This species was rare with five recorded at the end of March 1967 and 1968, one on 4 May 1965 and one in October 1965 and 1966.

Palaearctic species

Ruddy Shelduck One was seen on 8 and 22 October 1967.

Eurasian Wigeon This species was recorded as early as 8 October and as late as 1 May, with most present November to February (Table 1). The largest numbers recorded were 153 on 11 January 1970 and 109 on 23 February 1969. Numbers varied from week to week: in 1966 on 10 November 36 were recorded, 24 November (66), 16 December (five); in 1965 on 1 January (14), 2 January (19), 9 January (21), 16 January (23), 30 January (30). Wintering Eurasian Wigeon, as well as Common Teal/Garganey, Northern Pintail, Northern Shoveler and Common Pochard move frequently among the highland lakes. Numbers also varied annually (Table 2).

Gadwall The only record was of two seen on 2 January 1965.

Common Teal/Garganey These small ducks were noted as early as October and as late as 9 May with most November to March (Table 1). The largest numbers recorded were 290 on 28 November 1965, 308 on 30 January 1965, 486 on 27 February 1965 and 450 on 6 March 1965. Numbers of individuals varied from visit to visit. On 10 consecutive weekly visits in November and December 1965 and January 1966 I recorded 67, 102, 220, 290, 260, 300, 241, 349, 307 and 356.

Northern Pintail This duck was recorded as early as 22 October and as late as 9 May with most noted from late December to early March (Table 1). The largest numbers recorded were 193 on 11 January 1970 and 192 on 3 March 1968. Numbers of individuals also varied from visit to visit: on consecutive weekly visits in February and March 1965, 49, 34, 10, 20, 23 and five were recorded. Annual monthly averages (Table 2) for all months October–April ranged from 6.0 per month in 1968–69 to 68.0 per month in 1967–68.

Northern Shoveler The earliest date recorded was 3 October. Most were present between November and January (Table 1) although in 1965 this species remained later in the season than did other Palaearctic wildfowl: in 1965 on 17 April 49 were recorded, 23 May (40), 30 May (47), 6 June (50), 13 June (34), 10 July (four), 25 July (two), 1 August (one). Largest numbers recorded were 67 on 26 December 1965 and 58 on 15 January 1968. Numbers also varied annually (Table 2).

Common Pochard The earliest this species was noted was 22 October and the latest 3 April, with most present December to February (Table 1). Largest numbers recorded were 48 on 9 February 1966 and 42 on 26 December 1965. Numbers of individuals varied with each visit: during seven consecutive weekly visits in the Palaearctic winter of 1965-66, on 26 December 42 were recorded, 7 January (17), 14 January (27), 30 January (29), 6 February (48), 13 February (19), 20 February (35). Numbers also varied annually (Table 2).

Ferruginous Duck Singles were seen on 2 January 1965, 14 January 1966 and 3 March 1968.

Tufted Duck The earliest date for this species was 17 September and the latest 13 June. Most individuals were observed from November to April (Table 1), usually in small numbers of two to eight during each visit. Largest numbers recorded were 21 on 10 December 1965, 13 on 24 November 1966 and ten on 12 March 1965. Numbers varied

from visit to visit: on nine consecutive visits during February to early April 1965, numbers recorded during each visit were two, four, two, five, seven, two, six, eight, and six. Numbers also varied annually (Table 2).

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Preliminary assessment of forest birds in Kiono, Pande, Kisiju and Kiwengoma coastal forests, Tanzania

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A preliminary assessment of the forest birds in four Tanzanian coastal forests (Kiono, Pande, Kisiju and Kiwengoma) is presented. Up to 51 species of forest bird were recorded from a single forest, with diversity declining in a sequence: Kiono; Kiwengoma, Pande; Kisiju. The threatened species, Sokoke Pipit *Anthus sokokensis,* was recorded in Kiono and the near-threatened species, Southern Banded Snake Eagle *Circaetus fasciolatus* in Kiono, Kiwengoma and Pande, Plain-backed Sunbird *Anthreptes reichenowi* in Kiono and Pande, and Uluguru Violet-backed Sunbird *Anthreptes neglectus* in Kiono and Kiwengoma. Moreover, the candidate Red Data Book species Tiny Greenbul *Phyllastrephus debilis* and Chestnut-fronted Helmet-shrike *Prionops scopifrons* were recorded in Kiono, Pande and Kiwengoma, Kretschmer's Longbill *Macrosphenus kretschmeri* was recorded in Kiono and Kiwengoma, and Little Yellow Flycatcher *Erythrocercus holochlorus* and Green Tinkerbird *Pogoniulus simplex* were recorded in Kiono and Pande. On the basis of these preliminary data, Kiono appears to support the largest number of scarce species.

All four forests visited are relatively small and are suffering increasing damage from both agricultural clearance and logging. Attention is drawn to the need for urgent action to conserve these particular coastal forests and to identify all others remaining.

The coastal forests of East Africa are a heterogeneous group of isolated evergreen or semi-evergreen closed-canopy forests located in the coastal region, generally within 50 km of the Indian Ocean and usually on the tops of hills. Such forests are believed to have been in existence, and isolated from other forest blocks in Africa, for around 30 million years. Moreover, they have been subject to a relatively stable moist climatic regime throughout this (Polhill 1989). Because of this extended period of isolation and climatic stability, coastal forests have developed high levels of biological endemism and near-endemism (Burgess *et al.* in prep., Hawthorne 1984, Howell 1981, Lovett 1988, Polhill 1969, 1989, White 1983).

Preliminary ornithological investigations in coastal forests, particularly those of the Pugu Hills in Tanzania and Arabuko-Sokoke in Kenya, have demonstrated their global conservation importance (N.E. Baker, unpublished, Bagger *et al.* 1989, Britton 1980, Britton *et al.* 1980, Britton & Zimmerman 1979, Collar & Stuart 1985, 1988, Howell 1981, Kelsey & Langton 1984, Moreau 1966, Pakenham 1979, Ripley & Heinrich 1966, 1969, Stuart 1981, Turner 1977). For example, current knowledge suggests that the Sokoke Scops Owl *Otus ireneae* and Clarke's Weaver *Ploceus golandi* are endemic to the Arabuko-Sokoke coastal forest in Kenya (Britton & Zimmerman 1979, Collar & Stuart 1985). Moreover, Sokoke Pipit *Anthus sokokensis* and races of the East Coast Akalat *Sheppardia gunningi sokokensis*, Spotted Ground Thrush *Turdus fischeri fischeri*, Green Barbet *Stactolaema olivacea woodwardi* and Pale-breasted Illadopsis *Trichastoma rufipennis puguensis* are believed to be wholly confined to coastal forests (Collar & Stuart 1988). In addition, several other forest birds have their centre of population in these forests.

Despite the high level of ornithological importance demonstrated for some coastal forests, the bird assemblages of the majority of such forests in Tanzania are not known. As a consequence, the Wildlife Conservation Society of Tanzania (WCST), in conjunction with the International Council for Bird Preservation (ICBP), have initiated a coastal

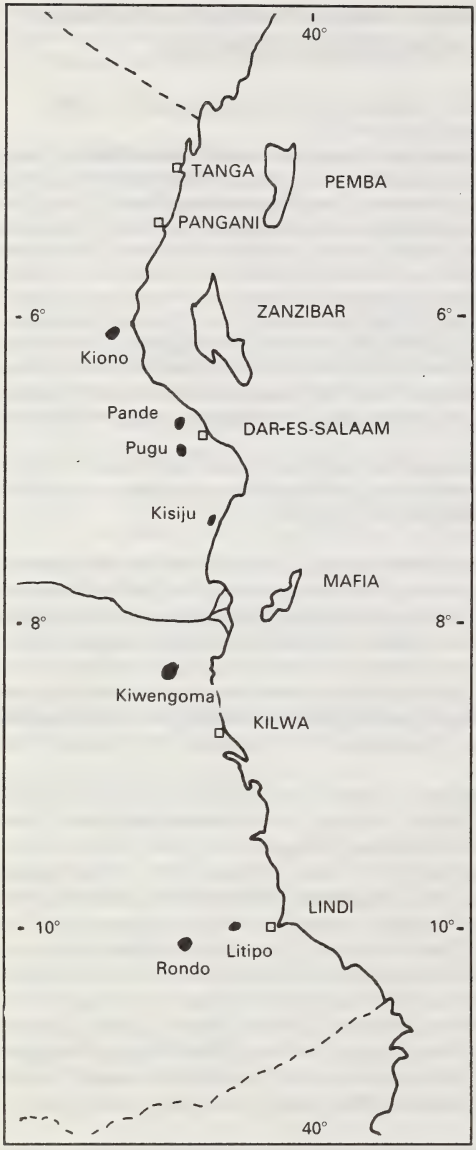

Fig. 1. *Location of Tanzanian coastal forests mentioned in the text*

forest project aiming to collect bird data on each forest. Recent studies have been completed in Rondo Forest Reserve and Litipo Forest Reserve in southern Tanzania (Bagger *et al.* 1989, Holsten *et al.* 1991.). In this paper we present preliminary data on the forest birds recorded in four additional Tanzanian coastal forests, as collected in 1989 and early 1990. Globally scarce, or potentially scarce species as defined in the ICBP/IUCN Red Data Book for Africa (Collar & Stuart 1985), are highlighted, and assemblages are briefly compared with those previously published from Tanzania and Kenya.

Study Sites

Locality details for the four forests studied between 1989 and 1990 are presented below, in a sequence from the north to the south of Tanzania (see Fig. 1).

Kiono Forest Reserve (6° 10S, 38° 35E)

Kiono Forest covers about 20 km^2 and is located some 15 km inland from the Indian Ocean and 20 km west-south-west of the coastal town of Sadaani, with the majority of the forest growing on a plateau around 300 m above sea level. Around 50 per cent of the forest has been logged in recent years, but even in the apparently unlogged areas there are few large trees which might imply logging at some point in the past. There has also been some recent agricultural clearance around the villages of Mbwebwe and Gongo. Two ringing sites were used in this study, (a) 3.5 km along the vehicle track between the villages of Mbwebwe and Gongo in apparently primary closed-canopy forest,

and (b) within 0.5 km of the north-west corner of the large wetland area inside the forest.

Pande Forest Reserve (6° 42S, 39° 05E)
Pande Forest covers approximately 11 km^2 of a gently rounded ridge of sandstone ranging up to 300 m above sea level and located *c.* 25 km north-west of Dar es Salaam and 16 km inland from the Indian Ocean. The canopy of this forest has been partially removed for timber and to produce fuel-wood and charcoal for Dar es Salaam, hence the forest has a rather open structure. The main ringing site was located in partially damaged forest towards the southern end of the site, approximately 5 km from the entrance to the reserve via Mabwe Pande village. A second ringing site was located at the northern end of the forest, approximately 1 km from the entrance to the reserve.

Kisiju Forest (7° 24S, 39° 20E)
This small forest is located on an island surrounded by a tidal creek and adjacent to the Indian Ocean, some 5 km north of the coastal village of Kisiju. The main forest currently occupies some 3 km^2, although other fragments of forest are located on nearby islands and the mainland. In 1982 the forest was regarded as largely undamaged (Hawthorne 1984). However, it is presently being rapidly cut down and burnt to provide poor-grade agricultural land for subsistence farmers. The ringing site was located in primary forest adjacent to a farm clearing, *c.* 200 m inland from the high tide mark, and *c.* 6 km north of Kisiju.

Kiwengoma Forest Reserve (8° 23S, 38° 55E)
This forest is on the the complex topography of the Matumbi massif, located to the south of the Rufiji river, 25 km to the south-east of Utete and about 20 km inland from the Indian Ocean. The forested area covers at least 25 km^2, but the best stands are found in the steep-sided valleys with secondary forest on the plateau-tops. Areas of unlogged forest with large trees still remain but selective felling of timber trees by pit-sawers is altering the composition of the forest and agricultural clearance is increasing. Four ringing sites were used and these were evenly distributed along the Mwengei valley, the widest in the reserve.

Study Methods

Species-lists of ground-dwelling and shrub-layer birds in each forest were principally compiled by catching specimens in mist-nets. These nets were 3 m high, varied between 9 m and 18 m in length and were positioned contiguously along *c.* 1 m wide rides cut through typical forest vegetation. At each site approximately 400 m^2 of net were located along such 'net-rides' throughout the investigation period. Net-rides avoided forest edges so that forest-interior rather than forest-edge and woodland species were caught. Nets were obtained from the British Trust for Ornithology. Every day the nets were in place, captured birds were removed each hour from 07:00 to 19:00 hours local time (dawn to after dusk), then identified using Mackworth-Praed & Grant (1960), weighed and measured back at camp. The original ringing sheets presenting standard biometric data, moult status, level of fat deposition and extent of brood-patch are held by Neil Burgess in the UK and Neil Baker (ICBP representative) in Dar es Salaam.

Lists of canopy species and ground-living birds compiled during the dry season (July to October 1989) in Kiono, Pande and Kisiju were augmented by early morning surveys and observation of bird parties when they were encountered throughout the day. The

visits to Kiono and Kiwengoma in January to March 1990 coincided with the main breeding seasons for most forest birds, hence many species which were not caught could be identified from their songs.

Table 1. *Main periods of ornithological investigation in Kiono, Pande, Kisiju and Kiwengoma coastal forests, Tanzania*

Forest	year	month(s) and season	study period	survey personnel
Kiono (1)*	1989:	August/September (dry)	3 weeks	NDB, MH, CC, CM
Kiono (2)	1990:	January/March (wet)	3 weeks	SGD, CM
Pande	1989:	July/August (dry)	3 weeks	NDB, MH, CC, CM
Kisiju	1989:	September (dry)	1 week	NDB, MH, CC, CM
Kiwengoma	1990:	January-March (wet)	$2^1/_2$ weeks	SGD, CM

*also visited on three previous occasions by Neil Baker, ICBP representative for Tanzania.

The personnel responsible for gathering the data used in this paper, as well as the year, season, and length in weeks of the study period are presented in Table 1.

Field support for this project was provided by: a) Frontier-Tanzania expeditions TZ01 and TZ03, a joint initiative of the Society for Environmental Exploration, UK and The University of Dar es Salaam, Tanzania, and b) The Wildlife Conservation Society of Tanzania. Additional technical and financial support was provided by: a) The International Council for Bird Preservation, Cambridge, UK, and b) The Royal Society for the Protection of Birds, Sandy, UK.

Results

Table 2 presents the occurrence of forest birds in the four Tanzanian coastal forests investigated, as arranged left to right in a sequence from north to south. The total number of forest birds for each forest is also presented to give an idea of species-diversity. However, it is important to note that many of the sites have only received a few weeks' study (see Table 1), and not over all the seasons, hence the species-lists for most forests are probably not definitive.

Records of Scarce Species

Scarce species, as defined in Collar & Stuart (1985), recorded during this project, are presented in Table 3. Most of these species were identified from captured individuals. However, Southern Banded Snake Eagle and Chestnut-fronted Helmet-shrike were identified by sight only, and Kretschmer's Longbill and Green Tinkerbird were identified from calls alone.

From these data it can be clearly seen that Kiono forest supports the largest number of scarce birds. As all these species were recorded in August and January–February, the latter being the breeding season, they can be assumed to breed in this forest.

It is also possible that visits during the migration period would locate the rare Spotted Ground Thrush *Turdus fischeri* on migration in some, if not all of these forests.

Table 2. *Provisional assessment of the species-composition and relative abundance of forest birds in Kiono, Pande, Kisiju and Kiwengoma coastal forests, Tanzania*

(Names and taxonomic order follow Britton 1980; assessment of forest birds is by Neil Baker, ICBP representative for Tanzania; forests are arranged north to south from left to right)

	Kiono	Pande	Kisiju	Kiwengoma
Accipitridae (eagles and hawks)				
Circaetus fasciolatus Southern Banded Snake Eagle	x(4)			x(4)
Accipiter melanoleucus Great Sparrowhawk	x(4)			
A. tachiro African Goshawk	x(3)	x(3)	x(3)	x(4)
Stephanoaetus coronatus Crowned Eagle	x(4)			x(3)
Numididae (guineafowl)				
Guttera pucherani Kenya Crested Guineafowl	x(2)	x(2)	x(3)	x(2)
Columbidae (pigeons and doves)				
Turtur tympanistria Tambourine Dove	x(2)	x(2)		x(1)
Psittacidae (parrots)				
Poicephalus robustus Brown-necked Parrot	x(2-3)			
P. cryptoxanthus Brown-headed Parrot				x(3)
Musophagidae (turacos)				
Tauraco livingstonii Livingstone's Turaco	x(2)	x(3)		x(2)
Cuculidae (cuckoos and coucals)				
Ceuthmochares aereus Yellowbill	x(3)	x(3)	x(4)	
Chrysococcyx montanus Barred Long-tailed Cuckoo				x(1)
Strigidae (owls)				
Ciccaba woodfordii African Wood Owl	x(2)	x(2)		x(1)
Caprimulgidae (nightjars)				
Caprimulgus pectoralis Fiery-necked Nightjar	x(2)	x(2)		
Trogonidae (trogons)				
Apaloderma narina Narina's Trogon	x(2)	x(2)		x(1)
Alcedinidae (kingfishers)				
Ispidina picta Pygmy Kingfisher	x(1)	x(1)	x(2)	x(1)
Bucerotidae (hornbills)				
Bycanistes bucinator Trumpeter Hornbill	x(1)	x(1)	x(2)	x(2)
Capitonidae (barbets)				
Pogoniulus bilineatus Yellow-rumped Tinkerbird	x(1)	x(1)	x(1)	x(1)
P. simplex Green Tinkerbird	x(3)	x(3)		
Buccanodon leucotis White-eared Barbet				x(2)
Indicatoridae (honeyguides)				
Indicator variegatus Scaly-throated Honeyguide	x(1)			
I. minor Lesser Honeyguide		x(1)		
Picidae (woodpeckers)				
Campethera abingoni Golden-tailed Woodpecker	x(3)			x(2)
C. cailliautii Little Spotted Woodpecker	x(3)	x(2)		x(3)
Eurylaimidae (broadbills)				
Smithornis capensis African Broadbill	x(2)	x(2)		x(1)
Pittidae (pittas)				
Pitta angolensis African Pitta				x(2)
Hirundinidae (swallows, martins, rough-wings)				
Psalidoprocne pristoptera Black Rough-wing				x(2)

	Kiono	Pande	Kisiju	Kiwengoma
Dicruridae (drongos)				
Dicrurus ludwigii Square-tailed Drongo	x(1)	x(1)		x(1)
Pycnonotidae (bulbuls)				
Chlorocichla flaviventris Yellow-bellied Greenbul	x(1)	x(1)	x(2)	x(1)
Phyllastrephus fischeri Fischer's Greenbul	x(1)	x(2)	x(2)	x(1)
P. flavostriatus Yellow-streaked Greenbul	x(1)	x(1)		x(1)
P. debilis Tiny Greenbul	x(1)	x(1)		x(1)
Nicator chloris Nicator	x(1)	x(1)	x(2)	x(1)
Turdidae (thrushes, robins, etc.)				
Cercotrichas quadrivirgata E. Bearded Sc'b Robin	x(2)	x(1)		x(2)
Cossypha natalensis Red-capped Robin Chat	x(1)	x(1)	x(1)	x(1)
Neocossyphus rufus Red-tailed Ant Thrush	x(1)	x(2)		x(2)
Turdus gurneyi Orange Ground Thrush	x(4)			
Sylviidae (warblers)				
Apalis melanocephala Black-headed Apalis	x(2)			
Camaroptera brachyura Grey-backed Camaroptera	x(1)	x(1)	x(2)	x(1)
Macrosphenus kretschmeri Kretschmer's Longbill	x(3)			x(2)
Muscicapidae (flycatchers)				
Batis mixta Forest Batis	x(2)			
Erythrocercus holochlorus Little Yellow Flycatcher	x(2)	x(2)		
Trochocercus cyanomelas Crested Flycatcher	x(3)	x(2)		x(2)
Terpsiphone viridis Paradise Flycatcher	x(2)	x(2)		
Bias musicus Black and White Flycatcher				x(3)
Motacillidae (wagtails and pipits)				
Anthus sokokensis Sokoke Pipit	x(4)			
Malaconotidae (bush-shrikes)				
Dryoscopus cubla Black-backed Puffback	x(3			x(3)
Malaconotus quadricolor 4-coloured Bush Shrike	x(3)	x(3)		x(3)
Laniarius ferrugineus Tropical Boubou	x(2)	x(2)		x(2)
Prionopidae (helmet shrikes)				
Prionops scopifrons Chestnut-fronted H. Shrike	x(2)	x(2)		x(2)
Sturnidae (starlings)				
Lamprotornis corruscus Bl-br'd Glossy Starling	x(1)			x(1)
Nectariniidae (sunbirds)				
Anthreptes collaris Collared Sunbird	x(1)	x(1)		x(2)
A. reichenowi Plain-backed Sunbird	x(1)	x(1)		
A. neglectus Uluguru Violet-backed Sunbird	x(2)			x(3)
Nectarinia olivacea Olive Sunbird	x(1)	x(1)	x(1)	x(1)
Zosteropidae (white-eyes)				
Zosterops senegalensis Yellow White-eye		x(2)		
Ploceidae (weavers)				
Ploceus bicolor Dark-backed Weaver	x(1)	x(1)		x(1)
Estrildidae (waxbills, etc.)				
Hypargos niveoguttatus Peters' Twinspot	x(2)	x(2)		x(2)
Mandingoa nitidula Green-backed Twinspot	x(2)	x(2)	x(3)	x(2)
Total number of species	51	37	13	43

Key: (1) = seen 2–3 times per day; (2) = seen once every 2–3 days; (3) = seen a few times in total; (4) = seen once or twice.

Table 3. *Presence of globally scarce species by study forest (rarity criteria from Collar & Stuart 1985)*

The criteria are Endangered, Vulnerable, Indeterminate, Rare, Insufficently known, Near-threatened, and Candidate

Kiono	**Vulnerable:** Sokoke Pipit **Near-threatened:** Plain-backed Sunbird, Southern Banded Snake Eagle, Uluguru Violet-backed Sunbird **Candidate:** Tiny Greenbul, Chestnut-fronted Helmet Shrike, Kretschmer's Longbill, Little Yellow Flycatcher, Green Tinkerbird
Kiwengoma	**Near-threatened:** Southern Banded Snake Eagle, Uluguru Violet-backed Sunbird **Candidate:** Tiny Greenbul, Chestnut-fronted Helmet Shrike, Little Yellow Flycatcher, Green Tinkerbird
Pande	**Near-threatened:** Plain-backed Sunbird **Candidate:** Tiny Greenbul, Chestnut-fronted Helmet Shrike, Kretschmer's Longbill
Kisiju	none

Other Notable Records

The capture of a single specimen of Orange Ground Thrush *Turdus gurneyi* in Kiono during August, and possible sight records of a specimen during January–February are highly notable as this is generally regarded as a montane species, not normally associated with lowland evergreen forests (Britton 1980). However, there are occasional records of the species in other coastal forests (N.E. Baker pers. comm.).

The discovery of six nests of African Pitta *Pitta angolensis* in Kiwengoma during January/March provides the most northern breeding records of this species in East Africa.

Discussion

Our preliminary description of forest birds from these four coastal forests provides additional information on the bird assemblage of this ecosystem and the status of individual species. For example, the capture of two specimens of Sokoke Pipit in Kiono forest increases the number of known localities for this species to four and provides the most recent records of the bird in Tanzania (Burgess *et al.* in press). Additionally, the occurrence of near-threatened species such as Plain-backed Sunbird, Southern Banded Snake Eagle and Uluguru Violet-backed Sunbird in several of the forests shows they have a wider distribution than was previously realized. Moreover, the occurrence of candidate Red Data Book species in all forests except Kisiju allows the global status of these species to be more formally evaluated.

Our provisional data, allied with those from the Rondo Plateau (Bagger *et al.* 1989, Holsten *et al.* 1991), Litipo Forest (Bagger *et al.* 1989) and the Pugu Hills (N.E. Baker, unpublished; Collar & Stuart, 1988) (see Figure 1 for location details), indicate that the bird assemblages in many of the Tanzanian coastal forests render them conser-

vation priorities according to the criteria presented in Collar & Stuart (1988). However, all Tanzanian coastal forests which have been studied appear ornithologically less important than the Arabuko-Sokoke coastal forest in Kenya, where there are two endemic species and several other rare and near-threatened birds (Britton & Zimmerman 1979, Kelsey & Langton 1984). The relative importance of Sokoke may reflect the fact that around 170 km^2 of largely evergreen forest is present (Kelsey & Langton 1984), whereas in Tanzania individual sites generally occupy less than 20 km^2 and the total resource of evergreen coastal forest is probably only a few hundred square kilometres (Burgess *et al.* in prep.). In contrast, the bird assemblage of most Tanzanian coastal forests appears of more conservation significance than that of comparable valley forest in Somalia, where few species of global conservation significance have been discovered (Wood 1988).

The length and timing of ornithological investigation in a particular forest is also an important factor influencing the diversity of birds which have been recorded. For example, Kiono forest has been studied for six weeks in two seasons and the highest diversity of species has been recorded (Table 2). It is likely that visits in May and October would further increase the number of birds recorded in this forest because passage species such as the Spotted Ground Thrush and African Pitta would be moving through at that time. Other forests were studied in only one season and for three weeks or less (Table 1). If visits were made to all the Tanzanian coastal forests in all seasons then a more extensive and accurate list of forest birds would result for each site, enabling a better assessment of their relative importance.

However, we believe that even our preliminary studies show interesting ornithological differences between the various forests. For instance, East Coast Akalat appears genuinely absent from all four forests we investigated, whereas it is very common in Pugu, Rondo and Litipo forests (N.E. Baker, unpublished, Bagger *et al.* 1989, Holsten *et al.* 1991). Even Pande Forest, which is only 15 km north of Pugu, has no sign of this species. Other notable differences between Pande and Pugu are that the former supports Plain-backed Sunbird which has never been seen at the latter, and Uluguru Violet-backed Sunbird is frequent at Pugu but appears to be absent at Pande. Additionally, many of the normally common forest species appear to be absent from Kisiju which has a very depauperate bird assemblage. These differences are striking and cannot be explained on the current limited knowledge of the ecology, habitat preferences and dispersal potential of these forest birds.

It was also apparent from visits to Kiono and Kiwengoma during the breeding season, that the densities of birds varied markedly between sites. For example, Red-tailed Ant Thrush *Neocossyphus rufus* was much more common at Kiono than Kiwengoma, whereas for the Red-capped Robin Chat *Cossypha natalensis* and African Broadbill *Smithornis capensis* the reverse applied. Such differences need to be more fully investigated.

There remain at least twenty areas of coastal forest over 2 km^2 in area on the mainland of Tanzania and the islands of Zanzibar and Pemba which have received little, if any, recent ornithological investigation (see Burgess *et al.* in prep). These forests require urgent study in order to more fully evaluate the relative and overall ornithological importance of the Tanzanian coastal forests. These sites are to be visited as part of the continuing coastal forest project.

This work is made all the more urgent because many of the coastal forests are subject to extreme pressure for fuel, timber and agricultural land from the expanding population

of the coastal region (Burgess *et al.* in prep). Without a greater level of protection it is possible that many of the forests will be extensively damaged or completely destroyed before the end of the century.

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Birds of Lake Naivasha 1. General studies

Stephanie J. Tyler, L. Tyler and J. M. S. Lewis

Britton (1978) has described the birds of papyrus *Cyperus papyrus* swamp at Lake Kanyaboli on the northern shore of Kavirondo Gulf at Lake Victoria. There is little other information on birds of papyrus swamp in the Rift Valley of Kenya where those species found only in western papyrus swamps are absent (Greater Swamp Warbler *Acrocephalus rufescens*, White-winged Warbler *Bradypterus carpalis* and the papyrus endemic, Carruthers' Cisticola *Cisticola carruthersi* and other papyrus endemics such as the Yellow Swamp Warbler *Chloropeta gracilirostris* and Papyrus Canary *Serinus koliensis*).

There are extensive stands of papyrus at Lake Naivasha, although these vary in size from year to year depending on water levels and man's activities. For such an important bird site, and one visited by hundreds of ornithologists each year, the swamp communities of the lake are surprisingly poorly known.

A brief study, based on mist-netting, was made in early 1990 to investigate the composition of the swamp and swamp edge communities at Naivasha. It would be useful if this study could be extended to cover changes throughout the year, and between years. Preliminary data collected during the study on the ecological segregation of resident and migrant warblers in the swamp are presented in a companion paper (Tyler 1991).

Study area and methods

Lake Naivasha has been well described elsewhere, e. g. Njuguna (1981, 1982), Hartley (1985). The freshwater lake which is the highest of Kenya's Rift Valley lakes, lies at a altitude of 1884 m and covers an area of 120–130 km^2. The main body of the lake has a mean depth of only 5 m. Papyrus does not form a continuous band around the 50-km lake shore. In some places it has been cleared; in others it forms a narrow fringe, whilst at sites such as Safarilands, it may form a band over 100 m wide. The most extensive area is in the delta of three rivers flowing into the northern end of the lake. Here papyrus covers 11–12 km^2 (S. Njuguna, pers. comm.). There is therefore a large area of swamp and swamp edge habitats available to birds at Lake Naivasha.

In January, February and early March 1990 mist-netting was carried out at two sites on the western shore of the lake.

An evening and morning on 12–13 January (total 7 h) were spent at Fisherman's Camp with just two nets (120 feet—*c.* 37 m) at the edge of the papyrus and on a bank extending into it. A second evening and morning (total 7 h) on 13–14 January were spent at Safarilands. All subsequent visits were to this last site, and consisted of three weekends: 2–4 February; 16–18 February and an extended visit from 3–5 March—from 17:00 on the first evening to 11:00–12:00 on the last morning. In the evenings, netting continued until an hour after dusk; nets were then unfurled at or just before dawn. A maximum of 330 feet (100 m) of net was erected in a line extending from flooded grassland and swamp edge eastwards out into the papyrus swamp to within 10 m of the open water of the lake. The nets, which were set so that the bottom shelf was on or within 20 cm of the ground, were placed on a bank formed from material excavated from an irrigation channel.

The dry bank on which the nets were set varied from 0.5–3 m in width and from 0.5–2 m above the level of the lake. Clumps of *Sesbania sesban* grew on the grass-covered bank, with *Cassia* sp. and *Nicotiana glauca* on the landward side. To the north of the

bank lay a deep *c.* 5 m-wide drainage channel, carpeted with the introduced water fern *Salvinia molesta*, with a few clumps of Blue Water Lily *Nymphaea caerulea* and the recent invader Water Hyacinth *Eichhornia*. A narrow, shallower area of water lay between the channel and bank, in which grew some papyrus and other smaller *Cyperus* species, notably *C. immersus* and *C. digitatus*, and emergent plants such as Water Bistort *Polygonum* sp. , Great Hairy Willow Herb *Epilobium hirsutum*, *Ludwigia* sp. and a yellow composite *Crassocephalum paludum*. Beyond the drainage channel was an extensive area of almost uniform papyrus stretching for over 0.5 km to the north and from 100–300 m in width. An occasional clump of reed-mace *Typha* occurred within the swamp. To the south of the drainage channel was a further extensive stretch of papyrus, *c.* 100 m in width, which merged into a band of *Sesbania* trees and flooded grassland with more scattered *Sesbania* trees on the landward side. On the first and last visit two additional nets were erected in the flooded grassland.

All species of birds seen or heard were noted, as was any breeding activity. All birds caught, other than a small sample of doves, weavers, queleas and waxbills, were ringed. Primary moult and wing-length (maximum flattened chord) were recorded; birds under 50 g were weighed to the nearest 0.1 g, and others to the nearest 1 g.

Results

Bird communities at Naivasha

Over 80 species were recorded at the two sites. At Safarilands some 55 species were recorded on all visits. This figure excludes birds such as doves that were not associated with the swamp or swamp edge, and also excludes open water species of the lake such as terns, pelicans, and various ducks such as White-backed Duck *Thalassornis leuconotus*. (Appendix 1).

A total of 1167 birds was ringed (Table 1). In the evenings large numbers of Red-billed Queleas *Quelea quelea*, weavers (mainly Black-headed *Ploceus cucullatus*, Speke's *P. spekei* and Masked *P. intermedius*, with a few Baglafecht *P. baglafecht*, Spectacled *P. ocularis* and Chestnut *P. rubiginosus*), Waxbills *Estrilda astrild*, occasional Crimson-rumped Waxbills *E. rhodopyga* and on one evening, Zebra Waxbills *Amandava subflava* were caught when flighting across the bank to roost in the swamp. Smaller numbers were also caught during the day, but most were released unringed. Few biometric data were obtained for these species. At dusk, hirundines, chiefly African Sand Martins *Riparia paludicola*, with a few Eurasian Swallows *Hirundo rustica*, Sand Martins *R. riparia* and Banded Martins *R. cincta* amongst them, flew from north to south across the net line at Safarilands to roost. On one evening a catch was made of Yellow Wagtails *Motacilla flava* coming in to roost in papyrus only 100–200 m north of the drainage channel. An estimated 4500+ wagtails were using the roost, flying in from all directions.

Warblers (Sylviinae) dominated the daytime catches. The Lesser Swamp warbler *A. gracilirostris* was the most frequently caught species (Table 1). Sedge *A. schoenobaenus* and Great Reed Warblers *A. arundinaceus* were the most numerous Palaearctic species (Table 1).

In early March an apparent movement of Lesser Swamp Warblers was occurring, with 140 new birds caught on that visit. Palaearctic migrants were also on passage in early March as shown by 43 new Sedge Warblers, and the first Willow Warblers *Phylloscopus trochilus*, a Wheatear *Oenanthe oenanthe* and Blackcap *Sylvia atricapilla*.

Many of the other species caught, such as Variable Sunbirds *Nectarinia venusta* and White-fronted Bee-Eaters *Merops bullockoides* were attracted by the flowering *Sesbania*

Table 1. *Totals of birds caught and ringed at Lake Naivasha between 12 January and 5 March 1990. Figures in parentheses are retraps from previous visits; * refers to individual birds that were caught but not ringed; a number followed by * indicates that one or more birds was ringed of an unspecified number caught.*

Species	12–13 Jan	13–14 Jan	2–5 Feb	16–18 Feb	2–5 Mar	Total
Little Bittern	-	2	1	2	2(1)	7
Squacco Heron	-	-	-	-	2	2
Little Egret	-	-	-	-	1	1
Hottentot Teal	-	-	-	1	4	5
Blacksmith Plover	-	-	-	-	1	1
Common Sandpiper	-	-	-	-	1	1
Wood Sandpiper	-	1	-	-	3	4
Ruff	-	-	-	1	-	1
Black Crake	-	-	-	1	2	3
African Water Rail	-	-	-	-	1	1
White-fronted Bee-eater	-	1	1	-	-	2
Didric Cuckoo	-	-	-	-	1	1
Pied Kingfisher	-	1	-	1	4(1)	6
Malachite Kingfisher	*	-	3	4(2)	2(2)	9*
Eurasian Swallow	-	4	3	2	1	10
Sand Martin	-	1	2	-	-	3
African Sand Martin	1	116*	177	107(4)	169(13)	570
Banded Martin	-	2	1	1	16	20
African Pied Wagtail	-	-	1	-	-	1
Yellow Wagtail	-	-	75	-	1	76
Black-headed Oriole	-	-	-	1	-	1
Stonechat	-	-	1	2	-	3
Northern Wheatear	-	-	-	-	1	1
Great Reed Warbler	1	1	6	10(2)	2(3)	20
African Reed Warbler	2	-	1	5	-	8
Lesser Swamp Warbler	5	5	49	35(7)	140(11)	234
Basra Reed Warbler	-	-	-	1	-	1
Sedge Warbler	-	12	11	8	43	74
Reed Warbler	1	2	-	1	3(1)	7
Little Rush Warbler	-	-	7	4	7(2)	18
Winding Cisticola	-	4	6	12(6)	8(4)	30
Hunter's Cisticola	-	2	-	-(1)	-	2
Grey-capped Warbler	1	-	-	-	-	1
Willow Warbler	-	-	-	-	4	4
Garden Warbler	1	1	-	-	-	2
Blackcap	-	-	-	-	1	1
Scarlet-chested Sunbird	1	-	-	-	-	1
Variable Sunbird	-	4	1	6	2(1)	13
White-winged Widowbird	-	-	-	4*	-	4*
Red-billed Quelea	-	1*	*	*	1*	2*
Baglafecht Weaver	-	-	-	*	-	*
Masked Weaver	-	*	*	*	-	*
Speke's Weaver	-	*	*	*	*	*

Continued overleaf

Species	12–13 Jan	13–14 Jan	2–5 Feb	16–18 Feb	2–5 Mar	Total
Black-headed Weaver	-	-	*	*	*	*
Spectacled Weaver	2	1	-	2(1)	5	10
Chestnut Weaver	-	-	-	-	1	1
Zebra Waxbill	-	1*	*	-	-	1*
Waxbill	-	1*	*	*	17(1)	18*
Crimson-rumped Waxbill	*	-	-	-	3	3*

Table 2. *Summary of wing moult in a sample of warblers caught in lakeside swamp at Lake Naivasha in early 1990. Figures given are numbers of birds showing wing moult (primary or secondary moult), and with fresh or worn flight feathers.*

	12–14 Jan wing			2–4 Feb wing			17–19 Feb wing			2–5 Mar wing		
	m	f	w	m	f	w	m	f	w	m	f	w
A. gracilirostris	-	10	-	3	27	1	7	25	7	16	127	8
A. schoenobaenus	-	12	-	-	9	1	2	6	-	3*	41	-
A. scirpaceus	-	3	-	-	-	-	1	-	-	-	2	-
A. griseldis	-	-	-	-	-	-	-	1	-	-	-	-
A. arundinaceus	-	2	-	-	6	-	-	11	1	-	4	-
A. baeticatus	-	2	-	-	1	-	-	5	-	-	-	-
B. baboecala	-	-	-	1	6	-	3	1	-	-	8	-
C. galactotes	1	3	-	-	8	-	3	13	1	-	9	-
P. trochilus	-	-	-	-	-	-	-	-	-	1	4	-

Key: m = moult, f = fresh, w = worn; *A.* = *Acrocephalus*, *B.* = *Bradypterus*, *C.* = Cisticola, *P.* = *Phylloscopus*; * two *A. schoenobaenus* in early March showed arrested moult.

and *Nicotiana* or insects attracted to these trees and shrubs. Small numbers of kingfishers, and occasional waders and ducks, were caught when flighting across the bank along the lake edge or in the flooded grassland (Table 1). Few Black Crakes *Limnocorax flavirostris* and African Water Rails *Rallus caerulescens* were ringed, but many others were temporarily caught but then escaped, or avoided capture by creeping under the nets.

Breeding activity

None of the passerines had obvious brood patches, and no recently fledged young were caught. However, some *A. gracilirostris* had what was assumed to be juvenile plumage; this was recognizable by the more buff-rufous colour of the head and mantle compared with the darker brown of adults, and by the pale yellow colour of the inner mandibles compared to the reddish-orange colour of the adults' gape. Black tongue spots were clearly visible in these juveniles. Traces of the tongue spots could also be seen on other birds with more normal adult plumage. These were thought to be immature birds. The

weavers, queleas and widow birds were all either in, or coming into, full breeding dress.

In early March Winding Cisticolas *Cisticola galactotes* had established territories and there was much courtship behaviour. Little Rush Warblers *Bradypterus baboecala* were then also singing and displaying.

Only Black Crakes were proved to be breeding, with an adult with two small young (less than one week old). One of the Little Bitterns *Ixobrychus minutus* caught in January had an apparent brood patch.

Moult

A small proportion (up to 11 per cent) of *A. gracilirostris* were in active moult, but most had fresh or only slightly worn flight feathers, with a few with very worn feathers (Table 2). A greater proportion were moulting on later visits. Some *B. baboecala* were in moult in February but all eight birds caught in March had fresh plumage. Likewise a small proportion of *C. galactotes* were in moult in February but all nine birds handled in March had very fresh flight feathers (Table 2).

Of the Palaearctic visitors, most *A. schoenobaenus* had fresh plumage. The only bird in moult in early February had old worn plumage with the tail feathers all just regrowing, whilst two moulting later that month were in primary moult. Two of three moulting birds caught in March showed arrested moult. All *A. arundinaceus* on all visits had fresh plumage except for one still in secondary moult in mid February. Only small numbers of *A. scirpaceus* were caught, but one in February was in active moult (Table 2).

Discussion

The bird community

The true swamp birds comprised crakes, rails, coots and gallinules, and warblers. Waxbills and weavers also used this habitat sometimes during the day but most arrived at dusk to roost in the papyrus in large numbers. Hirundines and Yellow Wagtails also used the swamp as a roost but fed over the lake and on grassland during the day. Other species caught were not dependent on the papyrus swamp but on open water or flowering trees.

Of the non-granivorous passerines (excluding hirundines) caught in this study in the Lake Naivasha swamp and swamp edge, some 38 per cent were migrants. In general, both resident and migrant passerines were very much more numerous in the Naivasha papyrus swamp than in swamp at Lake Victoria in western Kenya (Britton 1978), where only 300 birds, including 186 granivorous birds, were caught in monthly 4-h early morning netting sessions during 15 months. This may indicate that papyrus at Naivasha is more productive than that at Lake Victoria, but the high numbers at the former site may be due to the much narrower fringe of swamp here with a greater diversity of habitats (e.g. ditch, bank and *Sesbania* trees) and the edge effect of swamp/flooded grassland

The Lesser Swamp Warbler was the most abundant warbler at Naivasha within the papyrus bed, whereas in western Kenya, where the larger Greater Swamp Warbler was most numerous, the smaller species was scarce and restricted to swamp edges and rocky islands. Of note was the marked increase in the number of Lesser Swamp Warblers on the last visit to Naivasha: 140 new individuals of this species were ringed in *c.* 34 h of netting activity from 2–5 March, compared with 84 birds in *c.* 42 h of the previous two weekends. The small number of retraps (Table 1) also indicates that these birds were dispersing through the papyrus rather than holding territory. The majority of Lesser Swamp Warblers was also caught in the same small area of papyrus towards the edge of the lake, suggesting that they were moving along the lake edge but within the swamp.

In Uganda and at a number of sites in Kenya, Pearson (1972) and Pearson *et al.* (1979) have shown the main arrival of Sedge Warblers to be in January and February, with numbers increasing during the spring to reach a peak in April–May. Unfortunately netting ceased at Naivasha in early March, but on the last visit numbers of Sedge Warblers had greatly increased (Table 1). A passage of other migrants was evident in early March with Willow Warblers, Wheatear and Blackcap being caught.

From the limited retrap data, several Great Reed Warblers appeared to be holding territory within the swamp.

Breeding Seasons

In terrestrial habitats in East Africa, many insectivorous birds breed at the onset of rains, and during rains, when there are peaks in insect numbers (Sinclair 1978, Dingle & Khamala 1972). In western Kenya the timing of breeding of the papyrus swamp birds also coincided with the long rains, although some birds were reared in the short rains of October to November (Britton 1978). Brown & Britton (1980) recorded many wetland birds showing a peak in breeding activity in or after the main rains from March to May, with some species having a second peak in the autumn short rains (October–November). Unfortunately, data are limited for the swamp warblers other than for Winding Cisticolas and Lesser Swamp Warblers which show a peak from April to July. Only one nest of African Reed Warbler is noted by Brown & Britton (1980), and just three nests of Little Rush Warblers. Jackson (1938) described a Little Rush Warbler nest at Naivasha low down within a few inches of the ground in a large tuft of reeds; he found many Lesser Swamp Warbler nests at higher levels, slung between two or more stems in reeds or in papyrus some 2–4 feet (0.6–1.3 m) above the water.

At Naivasha the rainfall increases markedly in late February/March to a peak in April, then drops off by June (Brown & Britton 1980). Although no nests were found in this study, several species, notably Winding Cisticolas, were singing vigorously and showing courtship behaviour by early March. The marked passage of Lesser Swamp Warblers probably indicated pre-breeding dispersion.

There are few data available on the seasonal abundance or composition of invertebrates in the papyrus swamp or at the lake edge at Naivasha. Britton (1978) suggested that there was a flush of insects in papyrus swamp in western Kenya associated with the onset of rains, whilst at Entebbe (Uganda), on Lake Victoria, Okia (1976) has demonstrated a seasonal increase in numbers of the mosquito *Aedes africanus*, which reaches a peak in the wet months of April and May.

Moult

The pattern of moult shown by the Lesser Swamp Warblers caught at Naivasha was consistent with the general pattern described by Britton (1978). He found that resident birds have a postnuptial moult, which lasts for about six months usually from June to November. Moult of immatures begins and ends some two months later than in adults, whilst birds reared in the autumn short rains still have primary moult only half completed at the start of the long rains. Thus the majority of Naivasha Lesser Swamp Warblers and other resident warblers in February and early March had fresh or only slightly worn plumage. Those Lesser Swamp Warblers in primary or secondary moult may have bred in the autumn rains, as confirmed by the presence of juveniles in the population.

The moult patterns of Sedge and Great Reed Warblers at Naivasha were also similar to those described by (Pearson 1973, 1975). Birds that winter furthest south, e.g. Marsh

Warbler *Acrocephalus palustris*, moult latest in the winter, but those that winter around the equator such as Reed Warblers, moult earlier, mainly in late autumn. Sedge and Great Reed also moult early during their stay in Africa, but south-east populations renew their plumage before the spring migration. Thus most Sedge Warblers that arrive late in East Africa are freshly moulted, having moulted elsewhere in late autumn. A few earlier arrivals are a mix of freshly moulted, unmoulted and just started. Likewise, Great Reed Warblers spending the late winter in Kenya, undergo moult in the late autumn north of the equator.

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 Received 12 November 1990

Appendix 1

Birds seen in or at the edge of the swamp but not, or only rarely, caught.

Little Grebe *Tachybatus ruficollis*—frequent in flooded grassland and on lake.

Long-tailed Cormorant *Phalacrocorax africanus*—frequent in flooded grass.

Dwarf Bittern *Ixobrychus sturmii*—one seen at swamp edge on 16–17 Feb and in early March.

Little Bittern *I. minutus payesii*—caught but not otherwise seen at Safarilands site; one *minutus* caught there and one seen at Fishermans Camp. (Wing-length 142–147 mm, n = 5, mean 144.5 (*payesii*); 141–144 mm, n = 2, mean 142.5 (*minutus*); mass 111.5–135 g, mean 124.3 (*payesii*); 94–128 g (*minutus*). One bird disgorged a partly digested rodent, and another a Louisiana Red Swamp crayfish.)

Grey Heron *Ardea cinerea*—regular at swamp edge.

Purple Heron *Ardea purpurea*—frequent at swamp edge.

Squacco Heron *A. ralloides*—frequent at swamp edge. (Wing-length 207, 222 mm, n = 2; mass 201, 236 g.)

Cattle Egret *Bubulcus ibis*—frequent at swamp edge and on adjacent grassland.

Little Egret *Egretta garzetta*—frequent at swamp edge.

Hadada *Bostrychia hagedash*—frequent at swamp edge and adjacent grassland.

Glossy Ibis *Plegadis falcinellus*—two seen at swamp edge at Fishermans Camp; small groups flying by swamp at Safarilands.

Sacred Ibis *Threskiornis aethiopica*—frequent at swamp edge.

African Spoonbill *Platalea alba*—small numbers at swamp edge.

Egyptian Goose *Alopochen aegyptiacus*—several at swamp edge.

Pintail *Anas acuta*

Shoveler *A. clypeata*

Garganey *A. querquedula*—all three Palaearctic species noted in flooded grassland; Garganey most numerous—20+.

Red-billed Teal *A. erythrorynchos*—small numbers in flooded grassland.

Hottentot Teal *A. hottentota*—frequent in flooded grassland. (Wing-length 151–160 mm, n = 5, mean 154; mass 227–266 g, n = 4, mean 245 g.)

Yellow-billed Duck *A. undulata*—commonest resident duck in flooded grassland.

Eurasian Marsh Harrier *Circus aeruginosus*—frequent over swamp.

African Marsh Harrier *C. ranivorus*—regularly seen over swamp.

Fish Eagle *Haliaeetus vocifer*—common over lake, swamp, and edge habitats.

Black-shouldered Kite *Elanus caeruleus*—one regularly hunting at swamp edge.

Osprey *Pandion haliaetus*—occasional.

Crowned Crane *Balearica pavonina*—a pair at swamp edge.

Moorhen *Gallinula chloropus*—frequent in and at edge of swamp.

Black Crake *Limnocorax flavirostra*—common in and at edge of swamp; many crossed the bank, walking below the nets. Adult with small young and juveniles seen.

African Water Rail *Rallus caerulescens*—heard or seen on every visit to Safarilands, in and at the edge of the swamp, often walking on *Salvinia* in the irrigation channel.

Red-knobbed Coot *Fulica cristata*—common in swamp.

Purple Gallinule *Porphyrio porphyrio*—occasionally seen, but often heard in swamp.

Jacana *Actophilornis africanus*—only infrequently seen at Safarilands in the drainage channel; common at Fishermans Camp.

Blacksmith Plover *Vanellus armatus*—frequent at swamp edge and adjacent grassland in pairs.

Long-toed Lapwing *V. crassirostris*—one pair in swamp at Safarilands; pair also at swamp edge at Fishermans Camp.

(Waders feeding on the flooded grassland at swamp edge were mainly Wood Sandpipers *Tringa glareola* and Ruff *Philomachus pugnax*, with smaller numbers of other species, notably Marsh sandpipers *T. stagnatilis*, Greenshank *T. nebularia* and Common Snipe *Gallinago gallinago*.)

Giant Kingfisher *Ceryle maxima*—female seen on four visits to Safarilands feeding in flooded grassland at swamp edge; constantly harried by Pied Kingfishers.

Pied Kingfisher *C. rudis*—common at swamp edge. (Wing-length 139–143 mm, n = 5, mean 141 mm; mass 71.1–81 g, n = 5, mean 78.4 g.)

Chestnut-bellied Kingfisher *Halcyon leucocephala*—one to two birds at swamp edge or amongst trees on adjacent grassland.

Malachite Kingfisher *Alcedo cristata*—the commonest kingfisher at both sites; adults plus immatures caught. (Wing-length 56–60 mm, n = 11, mean 57.8 mm; mass 14.5–16.8 g, n = 11, mean 15.8 g.)

White-throated Bee-eater *Merops bullockoides*—frequent at edge of swamp in ones and twos.

Banded Martin *Riparia cincta*—small numbers caught with other hirundines; (Wing-length 120–135 mm, n = 16, mean 128.3 mm; mass 19.5–24 g, n = 16, mean 21.5 g.)

African Sand Martin *Riparia paludicola*—the most numerous hirundine. Retraps suggested the total size of the flock roosting in the papyrus at the ringing site was less than 2000 birds. (For moult see Appendix 2.)

Stonechat *Saxicola torquata*—several birds at swamp edge.

Northern Wheatear *Oenanthe oenanthe*—recorded only in early March.

Willow Warbler *Phylloscopus trochilus*—several birds seen and heard at both sites on each visit, but only caught and heard singing in early March.

Grey-capped Warbler *Eminia lepida*—only seen (and one caught) at Fishermans Camp (frequent in scrub at swamp edge further north at Elsamere).

Cape Wagtail *Motacilla capensis*—pair at swamp edge feeding with Yellow Wagtails *M. flava* at Safarilands on two visits.

Grey-backed Fiscal *Lanius excubitorius*—common in grassland adjacent to swamp but often hunting or sitting in trees at swamp edge and on bank.

Note: 'Swamp' warblers and other commonly caught species excluded from this list.

Appendix 2

Moult in a sample of African Sand Martins *Riparia paludicola* caught going into roost in papyrus swamp at Lake Naivasha in early 1990. For each period, the proportion of birds caught is given for various stages of primary moult (actual numbers are shown in parentheses).

Primary moult score	13–14 Jan	2–4 Feb	16–18 Feb	2–5 Mar
all old	13.2 (7)	0	0	0
1–10	3.8 (2)	2.5 (2)	7.3 (6)	1.8 (1)
11–20	3.8 (2)	6.4 (5)	6.1 (5)	7.3 (4)
21–30	22.6 (12)	24.3 (19)	17.1 (14)	14.5 (8)
31–40	32.1 (17)	17.9 (14)	13.4 (11)	14.5 (8)
41–50	24.5 (13)	48.8 (38)	56.1 (46)	61.8 (34)
[50	13.2 (7)	28 (22)	34.1 (28)	36.3 (20)]
Sample size	53	78	82	55

Records for the 1990 East African Bird Report: *Scopus* 13 No. 3

Please send your records for 1990 as soon as possible please to Don Turner, Box 48019, Nairobi, Kenya.

Birds of Lake Naivasha 2. Foraging niches and relationships between migrant and resident warblers in papyrus swamp

Stephanie J. Tyler

Much discussion has centred on the relationships between Palaearctic migrants and African resident species during the northern winter months. The relative abundance of migrants to residents and the preferred habitats of migrants have been particularly emphasized (e.g. Morel 1968, Moreau 1972, Pearson 1972, Britton 1974).

The coexistence of migrants and residents during the winter provides much potential for competition or segregation, although unfortunately rather few data are available on this subject. Sometimes a super-abundance of food may permit coexistence of closely related migrant and resident species; this was suggested as a possible reason for two species of wagtail—the resident Mountain Wagtail *Motacilla clara* and the Palaearctic Grey Wagtail *M. cinerea*—feeding together on the same highland streams with no obvious signs of aggression or differences in foraging behaviour (Tyler & Ormerod 1986,1987). As an alternative, segregation could result. The partitioning of resources, by using different foods or habitats or by using a habitat in different ways, has been described during the breeding season (Lack 1970); between migrants in their winter quarters and morphologically similar resident species (Moreau 1972); and in some species during autumn migration (Bibby & Green 1981, Bairlein 1981, 1983, Ormerod 1990).

Acrocephalus warblers have, in particular, received attention during the breeding season and in the autumn in Europe. Here, most *Acrocephalus* spp. favour wetland habitats, notably reed-swamp dominated by *Phragmites australis*, marshes and fens. In the winter in Africa some species of *Acrocephalus* may, however, occur well away from water although others occur in abundance in lakeside vegetation (Britton 1974, 1978, Pearson 1972). In papyrus *Cyperus papyrus* swamp at Lake Naivasha in the Kenyan Rift valley up to six *Acrocephalus* warblers and three other closely related species overlap between January and March (Tyler *et al.* 1991). Papyrus swamp is consequently an interesting area for a study of resource partitioning.

In this paper data are provided on the segregation of warblers within papyrus swamp at Lake Naivasha. Particular attention is given to differences in size, in foraging behaviour and in niches favoured by each species.

Methods and study area

The study area at Lake Naivasha and methods used to catch warblers in and at the edge of the papyrus swamp have been described by Tyler *et al.* (1991). From January to early March 1990 mist-netting was carried out over a two to three day period at two weekly intervals. In late February and early March, the location of each bird caught in the nets (numbered from lake to swamp edge) and its position in the nets (bottom to top shelf) were also recorded. A note was made of all retraps of ringed birds. Casual observations were made of feeding behaviour of the swamp birds.

Results

Warbler community

During the study period a total of 234 Lesser Swamp Warblers *A. gracilirostris* was caught with 74 Sedge Warblers *A. schoenobaenus*, 20 Great Reed Warblers *A. arundinaceus*, 30

Table 1. *Body-mass, wing- and bill-lengths of eight species of warbler using papyrus swamp and swamp-edge at Lake Naivasha, January–March 1990*

Species	body-mass (g)				wing-length (mm)				bill-length (mm)		
	n	range	mean	S.D.	*n*	range	mean	S.D.	*n*	range	mean
Agra	221	11.9–21.2	16.49	1.52	223	63–79	71.74	2.75	157	12.5–18.0	15.0
Asch	68	9.2–13.5	11.41	0.95	70	63–71	67.36	1.79	23	10.5–12.5	11.4
Asci	3	10.7–11.2	11.00	0.26	4	67–71	69.5	1.73	1	13	–
Aaru	17	28.5–34.3	31.10	1.85	18	86–99	95.39	3.09	3	18	18
Abae	8	7.4–8.6	8.10	0.44	8	52–57	54.38	1.77	–	–	–
Bbab	19	10.4–13.5	11.85	0.75	19	54–67	56.74	2.84	5	12	12
Cgal	28	9.8–16.3	12.25	1.93	28	52–67	57.25	4.16	5	11–13	12
Chun	2	14.9	14.9	–	2	59–65	62.00	4.24	–	–	–

Key: *Agra* = *Acrocephalus gracilirostris*, *Asch* = *A. schoenobaenus*, *Asci* = *A. scirpaceus*, *Aaru* = *A. arundinaceus*, *Abae* = *A. baeticatus*, *Bbab* = *Bradypterus baboecala*, *Cgal* = *Cisticola galactotes*, *Chun* = *C. hunteri*

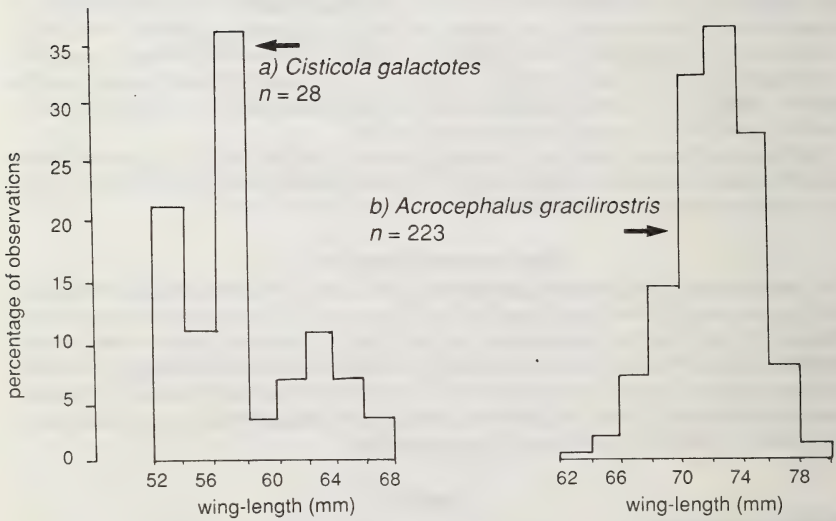

Figure 1. *Range in wing-length (mm) of a) Winding Cisticola (*n = *28) and b) Lesser Swamp Warbler (*n = *223) caught at Lake Naivasha in February and March 1990*

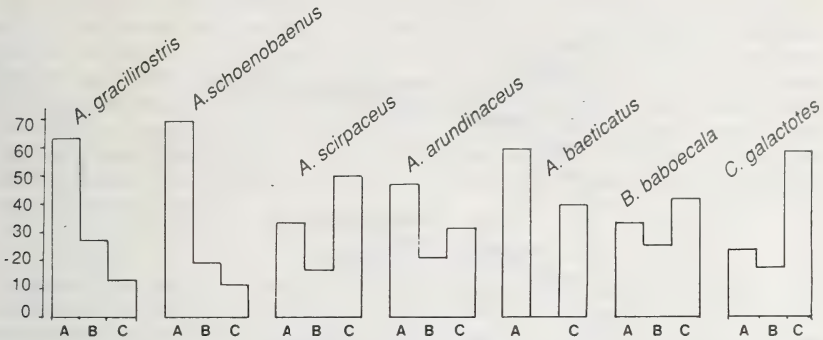

Figure 2. *Horizontal distribution of seven species of warbler caught in lakeside swamp at Naivasha. The proportion of birds caught for each species is given for three* c. *30-m lengths of nets: a) closest to the lake, b) within the swamp vegetation, and c) on the landward edge into flooded grassland*

Winding Cisticolas *C. galactotes*, 18 Little Rush Warblers *B. baboecala* and fewer than ten each of the remaining species of warbler (African Reed Warbler *A. baeticatus*, Reed Warbler *A. scirpaceus*, Basra Reed Warbler *A. griseldis* and Hunter's Cisticola *C. hunteri*—see Table 1 of Tyler *et al.* 1991).

Body-mass and wing- and bill-lengths

There were marked differences in mass and wing- and bill-length between the resident warblers with Lesser Swamp Warblers being on average heavier and having longer wings and bills than any other species (Table 1). The Palaearctic Great Reed Warbler was clearly heavier than any of the resident or other migrant species. Some Sedge Warblers overlapped in size with the smaller individuals of Lesser Swamp Warblers.

The great range in wing-lengths in both *A. gracilirostris* and *C. galactotes* was probably due to males being larger and heavier than females, although there was considerable overlap between the sexes (Fig. 1). Individuals of *A. gracilirostris* and of *B. baboecala* at Lake Naivasha had longer wings than birds in western Kenya (see Britton 1978) although *B. baboecala* at Naivasha were lighter than those weighed by Britton.

Location and height of species within the nets

About 65 per cent of Lesser Swamp Warblers were caught in the outermost two nets i. e. close to the lake and within the true swamp (Fig. 2). This species occurred in the lakeside nets more often than Great Reed Warblers (= 10.39, P <0.005) or Little Rush Warblers (= 166.39, P <0.001). Sedge Warblers also occurred more commonly nearer the lake than Little Rush Warblers (= 7.32, P <0.005). The sample size was rather small for African Reed, Little Rush Warblers and Great Reed Warblers but these appeared to be more dispersed, occurring both within the swamp and towards the landward edge. Winding Cisticolas occurred significantly more often on the landward edge than Lesser Swamp Warblers (= 25.07, P < 0.001) or Sedge Warblers (= 25.07, P <0.001).

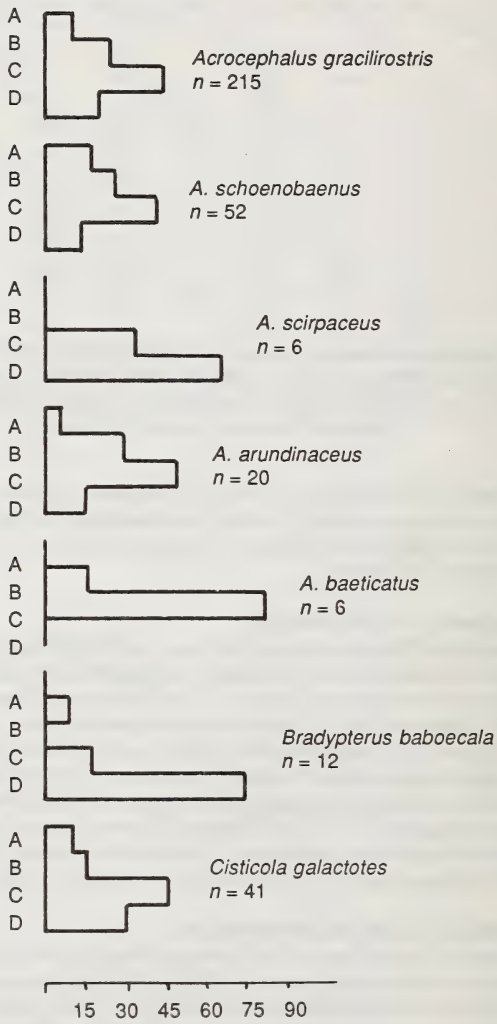

Figure 3. *Vertical distribution of seven species of warbler caught in lakeside swamp at Naivasha. The proportions of birds caught for each species are given for different net heights, described from A (top shelf) to D (bottom shelf)*

Most Lesser Swamp, Great Reed and Sedge Warblers and Winding Cisticolas were caught in the second shelf up. generally at less than 0.5 m above the ground, but occurred in all shelves (Fig. 3). Little Rush Warblers were mostly caught in the bottom shelf; on a pairwise basis, Little Rush Warblers were caught significantly more often in the lower half of the net than Sedge Warblers (= 5.35, $P < 0.01$) and more often than Lesser Swamp Warblers at a probability of $P = 0.06$ (= 3.49). Winding Cisticolas also occurred more often than Sedge Warblers in the lower half of the net (= 3.94, $P < 0.05$). In general, Little Rush Warblers occurred at lower heights than all other species but small samples limited statistical testing (Fig. 3).

Foraging behaviour

No quantitative data were obtained but opportunistic observations were made of the behaviour of any warbler seen foraging. Observations clearly were biassed towards birds feeding in the open or up in trees or the tops of the papyrus. Foraging Lesser Swamp Warblers within the papyrus stands were rarely visible but observations where the swamp met the drainage channel showed that these warblers often fed low down in the papyrus, picking insects off the water. Occasionally though they were observed feeding in the papyrus heads, where Williams (1963) also noted them foraging for flies and other insects.

No feeding observations were made of Little Rush Warblers but this species always dropped down into undergrowth when released after ringing, and the low position in the nets at which they were caught, both within the swamp and in the middle area amongst *Sesbania*, suggests that they were feeding very near to the ground. African Reed Warblers adopted various feeding strategies, occurring fairly low down within the papyrus, feeding amongst the stems, and also feeding at the edge in *Sesbania* trees, in the manner of Reed Warblers in willows *Salix* sp. in Europe.

Only one pair of Hunter's Cisticolas *Cisticola hunteri* was observed at the swamp edge, but the numerous Winding Cisticolas fed mainly in the undergrowth, at the base of trees and shrubs or walking out on to *Salvinia* in the drainage channel, feeding on insects in and on this floating carpet. These cisticolas generally occurred at the edge of the papyrus, feeding both on the bank, in the channel and within the area of flooded grassland. Sedge Warblers fed in a similar manner to *C. galactotes* on the *Salvinia* carpet, and at the base of papyrus and trees, but most observations of this species were in the two hours after dawn when they fed mainly in *Sesbania* trees near the swamp edge at heights up to 4–5 m. Great Reed Warblers were rarely observed feeding other than in the *Sesbania* trees.

Discussion

In this study, data indicated that there was considerable segregation of warblers at Naivasha. Winding Cisticolas occurred predominantly on the landward side of the swamp, feeding low down, and Lesser Swamp Warblers mainly at the lake edge. Great Reed Warblers occurred throughout the swamp and at various heights, but are, of course, much larger than the other species. The small Little Rush Warbler also occurred throughout but was most frequently caught on the landward side and only occurred at low levels. Other species, with the exception of Sedge Warblers, were caught in small numbers suggesting that swamp was not necessarily their preferred habitat. This is consistent with the different habitat preferences described by Pearson (1972) and Britton (1980), with Sedge Warblers being largely restricted to vegetation near water and other migrant *Acrocephalus* species occurring in a greater range of, often dry, habitats. Sedge Warblers

were common and apparently favoured a similar position in the swamp as Lesser Swamp Warblers, but the Palaearctic species, unlike the residents, also spent much time in trees at the swamp edge and on the bank.

In Nigeria, Aidley & Wilkinson (1987) caught three Palaearctic and three Afrotropical *Acrocephalus* species between September and May; the Palaearctic species comprised 85 per cent of total captures of warblers of this genus. In western Kenya, Britton (1978) found the impact of migrant *Acrocephalus* species on resident swamp birds to be minimal. He caught only one Sedge Warbler from September 1971 to November 1972. This contrasts markedly with the ratio of 1 : 2.5 (54 migrant *Acrocephalus* : 137 'resident' swamp warblers, i.e., *Acrocephalus*, *Bradypterus* and *Cisticola* spp.) at Naivasha in January and February 1990, and 1 : 2.7 (102 : 282) in early March.

Marked differences in body mass and bill-length between the commoner species of warblers (Table 1) might suggest that different prey items are taken, although smaller individuals of Lesser Swamp Warblers (Fig. 1) were similar in size to some Sedge Warblers. Likewise, smaller individuals of Winding Cisticola had a similar body mass and wing- and bill-length to Little Rush Warblers.

It is of interest that in western Kenya, Lesser Swamp Warblers appear to be excluded from the papyrus stands by Greater Swamp Warblers, but favour papyrus in the absence of their larger relative; but the same does not hold true for Winding Cisticolas in the absence of Carruthers' Cisticola. The former are birds of the swamp edge in both situations.

The observed differences in heights that different species of warblers were caught at appear largely to reflect the observed differences in feeding strategies. Sedge Warblers commonly fed high in *Sesbania* trees as well as down at water level, whilst cisticolas and Little Rush Warblers were skulking species, feeding and moving through vegetation near to the ground. Any pattern would be complicated by differences in behaviour when birds are courting and singing, or dispersing. Then they may be higher in the vegetation than when feeding. Certainly some species were singing in early March from the tops of the papyrus.

Britton (1978) found no evidence of vertical zonation in papyrus in eight species of warbler in western Kenya, and remarked that it was exceptional for any papyrus warbler to be caught above the second shelf of his mist nets. He therefore suggested that most warblers foraged near to the ground. However, he noted that some warblers were so similar in size that ecological separation was unlikely without habitat partitioning

Pambour (1990) found some evidence of vertical segregation between five passerines in a reed bed in southern France in the post-breeding migration period, but the three species—Reed, Sedge and Great Reed Warblers—all showed a similar vertical distribution. Their horizontal distribution was also similar, with most occurring near the lake shore, which Pambour suggested was due to the edge between the reed bed and lagoon forming a physical barrier and concentrating migrants, and possibly also to this outer edge, providing a greater diversity and abundance of prey. These reasons may also possibly explain why a high proportion of Lesser Swamp and Sedge Warblers were caught in the nets closest to the lake at Naivasha.

On the basis of the limited data from this and other studies, it would appear that the papyrus swamp warblers are largely segregated on size and habitat. The two species, Lesser Swamp and Sedge Warblers, that occur in the largest numbers in lakeside swamp, at least from January until March, and at similar heights, could compete, although the former is generally larger. The larger size of the African species might in itself be the

result of past competition with the closely related Palaearctic migrant.

Conversely, it may be that food is not a limiting factor and that during the late winter period (January to April) insects are sufficiently abundant so that several closely related species can coexist without competition or with minimal segregation. An increase in insects with the onset of the rains at the end of February would coincide with the peak passage of Sedge Warblers through Kenyan lakeside vegetation (Pearson *et al.* 1979). In the Serengeti, Sinclair (1978) found that Palaearctic migrants overlapped with related African species only where there was a local superabundance of food. As insects decreased in numbers, so the migrants dispersed into other habitats where they were not competing for available resources with closely related African species.

It would be helpful to have further information on the use made by birds of papyrus swamp and other types of emergent vegetation. Britton (1974) concluded that papyrus stands formed a homogeneous habitat supporting very few species of either residents or migrants, with the migrants feeding along the edge and hardly penetrating the interior of the swamp. By contrast, Pearson (1972) found that lakeside vegetation at Kampala (southern Uganda) supported higher densities of passerine migrants than cultivated bush away from the lake.

Data on seasonal fluctuations in invertebrates in the lakeside swamp at Naivasha would be very useful to show whether an abundance of food in late winter permits coexistence of warblers without competition. Further data on the use made of papyrus swamp by resident warblers throughout the year would also be of considerable interest and would help clarify whether the arrival of Palaearctic warblers in December and January affects their behaviour in any way. Additional data from April and May, when Sedge Warblers are most abundant in lakeside vegetation, would also be of value.

Acknowledgements

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Rondo Forest Reserve, Tanzania: an ornithological note including new records of the East Coast Akalat *Sheppardia gunningi*, the Spotted Ground Thrush *Turdus fischeri*, and the Rondo Green Barbet *Stactolaema olivacea woodwardi*

B. Holsten, A. Bräunlich and M. Huxham

The Rondo Forest Reserve is a semi-deciduous coastal forest situated at 10°10S, 39°15E in southern Tanzania, 77 km by road from the coastal town of Lindi. The forest is heterogeneous, with substantial numbers of large canopy trees, such as *Chlorophora excelsior* and *Ficus* sp. still present. Although the native flora is now threatened by extensive, illegal burning, as well as legal forestry practices, the indigenous forest still covers an area of approximately 18 km^2, making it probably the third largest remaining Tanzanian coastal forest. Despite the well recognized ornithological importance of coastal forests (e.g. Collar & Stuart 1988), and some early interest in the birds of the area, the Rondo Plateau has been virtually ignored by ornithologists. We visited the forest from 16 October to 3 December 1988 as part of a general coastal forest survey sponsored and supported by the Wildlife Conservation Society of Tanzania. Further information concerning the fauna, flora and conservation status of the forest is in the expedition report (available from the authors).

Using the scheme described in Collar & Stuart (1988) to assess the importance of forests for threatened African birds, our data suggest that Rondo ranks as joint 44th out of 75 forests, along with the forests of southeastern Kenya, including the Shimba Hills. This paper is intended as a brief introduction to the avifauna of the area, in the hope that further interest may be cultivated. Most of the birds observed are simply listed, although a few which we consider to be of special interest are described with additional notes. One member of the original team (AB) returned to the forest in February 1989 with two ornithologists (Kaj Halberg and Jans Bagger) from the Danish International Council for Bird Preservation. A total of 106 species was recorded between October and December, and a further 15 identified in February.

Species of special interest

Southern Banded Snake Eagle *Circaetus fasciolatus*
One bird was seen flying over the forest on 25 and 26 November.

Barred Long-tailed Cuckoo *Cercococcyx montanus*
One individual was seen in the *miombo* woodland surrounding the forest, and the bird was heard calling on a number of occasions. This species is usually considered to prefer montane habitats, and may possibly be a seasonal visitor to the coast.

Green Tinkerbird *Pogoniulus simplex*
Fry, Keith & Urban (1988) mention an "apparent gap in S Tanzania and N Mozambique" in the distribution of this species. However, we caught and observed this tinkerbird species on a number of occasions.

Rondo Green Barbet ***Stactolaema olivacea woodwardi***
This subspecies of the Green Barbet is known only from the Rondo Plateau. Five individuals were caught during the expedition; they showed no evidence of breeding. Birds were frequently heard and occasionally seen in the forest canopy, and a roosting hole was discovered approximately six meters high in the trunk of a large forest tree, which was regularly used by up to eight individuals simultaneously. All birds inspected showed a conspicuous patch of yellow on the head behind the eye, which appears to be more extensive than that shown for the Ngoye forest race in Fry, Keith & Urban (1988).

African Pitta ***Pitta angolensis***
Seven birds were netted, the first being caught on 19 November. All were in breeding condition.

Red-capped Robin Chat ***Cossypha natalensis***
No robin chats were recorded before 4 November, suggesting that this species is absent from the plateau before the rainy season.

East Coast Akalat ***Sheppardia gunningi***
This species has previously been recorded from only one site in Tanzania, the Pugu Hills, 20 km west of Dar es Salaam (Howell 1981), and has an extremely local distribution elsewhere in East Africa (Collar & Stuart 1985). It was exciting, therefore, to find that the akalat was common in the forest reserve; in fact, it was the most frequently caught species, with 129 individuals ringed (constituting 22 per cent of the total). We netted our first bird showing evidence of breeding on 13 November; however, the majority of individuals did not begin to develop brood patches until late November. Many juvenile birds were seen in February. One individual was caught at both the camps used, which, since the sites were approximately 6 km apart, demonstrates considerable potential for intra-forest movement in a species thought to be largely sedentary (N. Baker, pers. comm.). Given that the estimated extent of indigenous forest on the Rondo plateau is substantially more than that at Pugu (18 km^2 compared to 10 km^2), it seems that Rondo represents the most important breeding site for this species yet recorded in Tanzania.

Spotted Ground Thrush ***Turdus fischeri***
Six individuals were caught, the first one netted on 5 November. All birds caught showed some development of a brood patch, becoming progressively more extensive in birds netted later that month. Previously, *T. fischeri* has been recorded only as a non-breeding visitor to coastal forest in Kenya, and sites in northern Mozambique have been proposed as the most likely nesting areas (Collar & Stuart 1985). It therefore seems very probable that the thrush is breeding on the plateau, making Rondo the first known breeding site for the nominate subspecies.

Plain-backed Sunbird ***Anthreptes reichenowi***
Seventeen individuals were caught during the study, and this species was frequently observed foraging in the lower canopy and shrub layers of the forest. It therefore seems to be relatively common in Rondo.

Uluguru Violet-backed Sunbird ***Anthreptes neglectus***
This species was observed on a number of occasions, feeding on flowering shrubs and trees of the canopy and in forest clearings. On 15 and 20 November a pair was observed nest building.

Other species recorded

The following species were recorded either in the forest (a), in the *miombo* woodland (b), flying over the plateau (c) or in Rondo village (d). The frequency of observation is indicated on a scale from 1 to 4, 1 denoting a species recorded only once, 4 indicating regular observations:

Circus aeruginosus Marsh Harrier c1; *Circaetus gallicus* Short-toed Snake Eagle c1; *Terathopius ecaudatus* Bateleur c1; *Accipiter tachiro* African Goshawk a4; *Aquila wahlbergi* Wahlberg's Eagle b2; *Buteo buteo* Common Buzzard c1; *Stephanoaetus coronatus* Crowned Eagle a2; *Pernis apivorus* Honey Buzzard c1; *Falco subbuteo* Hobby c1; *Guttera pucherani* Kenya Crested Guineafowl a4; *Aplopelia larvata* Lemon Dove a2; *Turtur chalcospilos* Emerald-spotted Wood Dove a3; *T. tympanistria* Tambourine Dove a3; *Treron australis* Green Pigeon a2; *Poicephalus robustus* Brown-necked Parrot a3; *Tauraco livingstonii* Livingstone's Turaco a3; *Chrysococcyx cupreus* Emerald Cuckoo b2; *C. klaas* Klaas' Cuckoo b1; *Cuculus poliocephalus* Lesser Cuckoo b1; *C. solitarius* Red-chested Cuckoo a3; *Ceuthmochares aereus* Yellowbill a3; *Ciccaba woodfordii* African Wood Owl a3; *Caprimulgus pectoralis* Fiery-necked Nightjar a2; *Apus apus* Eurasian Swift c3; *A. caffer* White-rumped Swift c3; *Cypsiurus parvus* Palm Swift c2; *Telecanthura ussheri* Mottle-throated Spinetail c2; *Apaloderma narina* Narina's Trogon a3; *Ispidina picta* Pygmy Kingfisher a3; *Merops apiaster* Eurasian Bee-eater b2; *M. hirundineus* Swallow-tailed Bee-eater b2; *M. pusillus* Little Bee-eater b2; *Eurystomus glaucurus* Broad-billed Roller b2; *Phoeniculus purpureus* Green Wood Hoopoe b3; *Bycanistes bucinator* Trumpeter Hornbill a2; *Tockus alboterminatus* Crowned Hornbill a4; *Buccanodon olivaceum* Green Barbet a4; *Pogoniulus bilineatus* Yellow-rumped Tinkerbird a3; *Indicator minor* Lesser Honeyguide a2; *I. variegatus* Scaly-throated Honeyguide a2; *Campethera cailliautii* Little Spotted Woodpecker a3.

Smithornis capensis African Broadbill a3; *Delichon urbica* House Martin c2; *Hirundo abyssinica* Striped Swallow d2; *H. griseopyga* Grey-rumped Swallow b1; *H. rustica* Eurasian Swallow c2; *H. senegalensis* Mosque Swallow c2; *Psalidoprocne pristoptera* Black Rough-wing b4; *Riparia paludicola* African Sand Martin c2; *Dicrurus ludwigii* Square-tailed Drongo a4; *Oriolus auratus* African Golden Oriole a3; *O. larvatus* Black-headed Oriole b3; *O. oriolus* Golden Oriole b3; *Corvus albicollis* White-necked Raven d1; *Parus albiventris* White-bellied Tit b1; *Campephaga flava* Black Cuckoo-shrike b1; *Andropadus virens* Little Greenbul a3; *Chlorocichla flaviventris* Yellow-Bellied Greenbul a3; *Nicator chloris* Nicator a4; *Phyllastrephus debilis* Tiny Greenbul a4; *P. fischeri* Fischer's Greenbul a3; *P. flavostriatus* Yellow-streaked Greenbul a4; *Pycnonotus barbatus* Common Bulbul b4; *Cercotrichas quadrivirgata* Eastern Bearded Scrub Robin a4; *Neocossyphus rufus* Red-tailed Ant Thrush a3; *Apalis melanocephala* Black-headed Apalis a3; *A. flavida* Yellow-breasted Apalis b1; *Camaroptera brachyura* Grey-backed Camaroptera a4; *Phylloscopus trochilus* Willow Warbler b1; *Bradornis pallidus* Pale Flycatcher b1; *Batis capensis* Forest Batis a4; *Bias musicus* Black and White Flycatcher b1; *Platysteira peltata* Black-throated Wattle-eye a2; *Erythrocercus holochlorus* Little Yellow Flycatcher a1; *E. livingstonii* Livingstone's Flycatcher a2; *Terpsiphone viridis* Paradise Flycatcher a1; *Trochocercus cyanomelas* Crested Flycatcher a3; *Dryoscopus cubla* Black-backed Puffback a4; *Laniarius ferrugeneus* Tropical Boubou a4; *Malaconotus blanchoti* Grey-headed Bush Shrike a2; *M. quadricolor* Four-coloured Bush Shrike a3; *M. sulfureopectus* Sulphur-breasted Bush Shrike b1; *Tchagra*

australis Brown-headed Tchagra b2; *Prionops retzii* Retz's Helmet Shrike a3; *P. scopifrons* Chestnut-fronted Helmet Shrike a4; *Cinnyricinclus leucogaster* Violet-backed Starling a3; *Lamprotornis corruscus* Black-breasted Glossy Starling a3; *Anthreptes collaris* Collared Sunbird a3; *Nectarinia bifasciata* Little Purple-banded Sunbird b3; *N. olivacea* Olive Sunbird a4; *N. senegalensis* Scarlet-chested Sunbird b2; *Zosterops senegalensis* Yellow White-eye 2; *Euplectes ardens* Red-naped Widowbird b1; *Ploceus bicolor* Dark-backed Weaver a4; *Quelea quelea* Red-billed Quelea b1; *Passer griseus* Grey-headed Sparrow d2; *Hypargos niveoguttatus* Peters' Twinspot a3; *Mandingoa nitidula* Green-backed Twinspot a2; *Lagonosticta rubricata* Red-billed Firefinch b2; *Lonchura cucullata* Bronze Mannikin b4; *Serinus mozambicus* Yellow-fronted Canary b2.

Conclusions

Given the relatively superficial nature of our investigations, the Rondo Plateau forest proved to be of very significant ornithological interest, with two species, the East Coast Akalat and Spotted Ground Thrush, treated as rare in the *Red Data Book* (Collar & Stuart 1985). Three others, the Southern Banded Snake Eagle, Plain-backed Sunbird and Uluguru Violet-backed Sunbird are considered near-threatened, and the endemic subspecies, Rondo Green Barbet, is treated as an incipient species at risk. We consider that more rigorously worded and enforced conservation policies should be a high priority for the area, since the present pace of forest destruction, especially through illegal burning, will seriously threaten the integrity of the habitat within a few years.

Acknowledgements

We would like to thank Neil and Liz Baker of the Wildlife Conservation Society of Tanzania for their support and guidance. We are also deeply indebted to Mr and Mrs T. Fison for their invaluable assistance, and to all the Forestry Department workers and others at Rondo who welcomed and assisted us. We are also indebted to the German Society for the Protection of Birds for providing financial assistance.

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Names of periodicals must be given in full and, in the case of books, the town of publication and the publisher should be given.

Authors of 'papers' receive three copies of their contribution free of charge. Extra copies, which will be supplied at cost, must be ordered when the MS is accepted. All contributions should be sent to the Editor, G.C. Backhurst, Box 24702, Nairobi, Kenya.

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This normally forms a separate issue of *Scopus* and each report covers one calendar year and tends to relate principally to the birds of Kenya. Records from Tanzania and Uganda are listed in separate sections. Records should be sent to D. A. Turner, Box 48019, Nairobi as early in the new year as possible to ensure the speedy production of the Report.

Sightings of rare birds may be telephoned through to any OSC member (numbers inside the front cover) in the hope that the bird(s) may be seen by others. Criteria covering the submission of Bird Report records are given in the *Scopus* Supplement of June 1982, and copies may be obtained, free of charge, from D.A. Turner. Records of rare birds are assessed by the independent and internationally-based East African Rarities Committee.

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Contents

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Notice

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East African Bird Report 1990

SCOPUS

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Authors are asked to follow the conventions used in *Scopus* and to refer to a recent issue for guidance. A few examples of conventions are: **dates:** 23 September 1991 [note the order, no comma, not '23rd']; **names of birds:** Cape Rook *Corvus capensis*

Continued inside back cover

East African Bird Report 1990

THE FORMAT OF THIS REPORT follows that established in the 1987–89 ones, i.e. a general review for Kenya, together with the systematic lists and migrant dates, followed by similar records from colleagues in Tanzania and Uganda. With interest in Uganda forest birds gaining momentum, we are pleased to see an increase in Uganda records this year, a trend we hope will continue.

The revision of *Birds of East Africa* (Britton 1980) got under way during the year, though the List Committee charged with undertaking this project is very much aware of the work involved, and now feels that it will take longer than the two years anticipated earlier.

New or resurrected features in this report include a list of those undertaking ornithological projects in East Africa, and a list of literature references on East African birds—other than those appearing in *Scopus*—during the period 1977–1990. Both these features will be up-dated in future annual reports.

Kenya—general review and highlights

The New Year was generally dry over much of the country heralding what appeared to be the start of a long hot dry season. However, exceptionally heavy rains from mid February to mid April led to catastrophic flooding over much of western Kenya for several months. The period 25 April to early May was, thankfully, generally dry over much of the country and, apart from heavy rain on 9 and 22 May, the period generally known as the 'long rains' did not materialize, and allowed many parts of the country to recover from the earlier devastation.

There were several birding highlights during the year, notably the first records of White-chinned Petrel *Procellaria aequinoctialis* as well as several sightings of Shy Albatross *Diomedea cauta* off Shimoni during August and September, while from various border areas there were the first records of Brown-headed Apalis *Apalis alticola*, Red-pate Cisticola *Cisticola ruficeps*, Locust Finch *Ortygospiza locustella*, Black-bellied Seed-cracker *Pyrenestes ostrinus* and the distinctive, all-red form of the Red-headed Weaver *Anaplectes rubriceps jubaensis*, originally described as the Crimson Weaver *Ploceus jubaensis*. In addition, the second Kenya record of Superb Sunbird *Nectarinia superba* and the third record of Shining Blue Kingfisher *Alcedo quadribrachys* were reported from the west. The first breeding records of Gambaga Flycatcher *Muscicapa gambagae* were reported from the Kerio Valley during late March and April, while an all black juvenile *Sarothrura* pygmy crake appeared inside The Ark on a wet misty July night and, after several months in the care of a Nairobi veterinary surgeon it moulted into a superb male Streaky-breasted Pygmy Crake *S. boehmi*! Do we perhaps have a breeding population in the Aberdares?

The Ngulia Ringing Group reported its best year ever during the November and December southward migration with over 17 000 migrants ringed overall, a staggering 2432 of them on 24 November. Full details appear on pp. 159–164.

Finally, on a rather sad note, we have to report that the numbers of Grey Parrots

Psittacus erithacus in Kenya are probably down to single figures in the Kakamega–Kaimosi area, and the numbers of Great Crested Grebes *Podiceps cristatus* and African Darters *Anhinga rufa* continue to decline in the highlands and Rift Valley lakes.

Tanzania and Uganda

News from Tanzania during the year included records of several of the Pemba endemics which appear to be doing well, while in the south we had reports of the first East African specimens of Chirping Cisticola *Cisticola pipiens*. From northern Tanzania came news of the second Eurasian Hoopoe *Upupa e. epops* for the country and only the fourth Temminck's Stint *Calidris temminckii*. From the southwest we learned that the House Sparrow *Passer domesticus* now appears to be well established in Sumbawanga and Mbeya, extending its range north from Zambia.

On the brighter side, records from the eastern forest reserves indicate that many of the otherwise little known forest species appear to be in good shape, and we sincerely hope that the conservation of these vital forest reserves remains a high priority of the Tanzanian authorities.

Interest in saving the forests of southern and western Uganda also appears to be increasing as several conservation groups look to these areas as possible potential tourist destinations. A visiting group of birders spent some time in the Bwamba lowlands during February and March and produced several records of those species that just reach East Africa from the adjacent forest belt that stretches from Gabon to the Semliki River. Highlights of their visit were the first East African records of the Spot-breasted Ibis *Bostrychia rara*, Hartlaub's Duck *Pteronetta hartlaubii*, White-throated Blue Swallow *Hirundo nigrita* and the Ituri Batis *Batis ituriensis*, as well as numerous records of birds not recorded for several decades.

The Sub-committee is very conscious of the lateness of this report. The main reason for this is, quite simply, that most observers are very slow to submit their yearly records. The sub-committee has resolved to publish the next annual report within the following calendar year. Please co-operate by sending in your records as soon in the new year as possible.

D. A. Turner, Box 48019, Nairobi

Species report

Records collated by D. A. Turner

Abbreviations used after species' names:

S(A): **Scarce species**, five or fewer East African records
S(B): **Scarce species**, six to 25 East African records
R: **Requested species**: species of special interest whose status requires clarification
E: Records showing an **Extension of Range**
N: Records included for their **Numerical interest**
D: Records of migrants whose **Dates** are of interest
M: Records of **Miscellaneous** interest.

Kenya: Afrotropical and oceanic species

PODICIPEDIDAE GREBES

Podiceps cristatus **Great Crested Grebe N:** numbers remained very low: max count of 29 at Lake Nakuru 15 Jul, and only 2 reported from Lake Naivasha 28 Jan, and only 1 in Oct (several observers).

Podiceps nigricollis **Black-necked Grebe N:** max count at Lake Elmenteita >2000 Aug–Nov (MACC).

Tachybaptus ruficollis **Little Grebe N:** max count at Lake Nakuru NP >7000 28 Oct (RW). M: 1 flying around Ngulia Lodge 04:00 hrs 28 Nov (DJP).

DIOMEDEIDAE ALBATROSSES

Diomedea cauta **Shy Albatross S(A):** 10 sightings off Shimoni 2–25 Sep with a max of 3 birds on 18 Sep (photos obtained, PH, DAT).

PROCELLARIIDAE PETRELS, SHEARWATERS

Pachyptila desolata **Antarctic Prion S(A):** 1 off Shimoni 27 Sep (photos obtained, PH, DAT). Formerly considered a race of *P. vittata*.

Procellaria aequinoctialis **White-chinned Petrel:** 1 off Shimoni 9 Aug and 15 Sep (photos obtained, PH).

First record for Kenya and East Africa.

Puffinus lherminieri **Audubon's Shearwater S(B):** singles off Shimoni 13 Aug (PH), 1–5 daily off Kilifi 24 Dec 1990–6 Jan 1991 (TS).

OCEANITIDAE STORM-PETRELS

Oceanites oceanicus **Wilson's Storm Petrel S(B):** 1 off Kiunga 24 Sep (DAT).

PHAETHONTIDAE TROPICBIRDS

Phaethon lepturus **White-tailed Tropicbird S(B):** 1 off Shimoni 30 Aug (PH), 1 off Kiwayu 8 Oct (CH).

[***Phaethon rubricauda*** **Red-tailed Tropicbird S(A):** 1 reported *c.* 25 miles (40 km) off Watamu 26 Sep (PG) but no details available.]

PELECANIDAE PELICANS

Pelecanus onocrotalus **White Pelican N:** max >60 000 Lake Nakuru NP 27 Apr dropping to >22 000 by late Oct (RW). **B:** up to 5000 pairs continued to breed at Lake Elmenteita throughout the year (MACC).

Pelecanus rufescens **Pink-backed Pelican N:** 50–100 throughout the year at Lake Nakuru NP with max of 128 on 27 Apr (RW).

SULIDAE BOOBIES

Sula dactylatra **Masked Booby R:** singles off Shimoni 24 Sep and 30 Dec (PH), 1 off Kilifi 26 Dec (TS).

PHACROCORACIDAE CORMORANTS

Phalacrocorax carbo **Great Cormorant N:** max of >3000 Lake Nakuru NP 28 Oct (RW).

ANHINGIDAE DARTERS

Anhinga rufa **African Darter N:** singles at Tana bridge 11 Sep and Saiwa NP 18 Oct were the only records reported. The population in the Kenya highlands is now disturbingly low.

ARDEIDAE HERONS, BITTERNS

Ixobrychus minutus payesii **Little Bittern R:** present throughout the year (including immatures) Ibonia estate, Kiambu (JRPC). Pair Lake Naivasha late Jan and 17–18 Feb (DAT, SJT). Other records from Lake Jipe (Feb), Lake Baringo (Mar and Nov), Lake Naivasha and Mara GR (Aug) (DAT, ML).

Ixobrychus sturmii **Dwarf Bittern R:** singles Lake Naivasha 16–17 Feb and 2–5 Mar (SJT), 1 Mtito Andei 23 Mar (DJP), 1 Talek River, Mara GR 30 Sep (JRPC), and one caught and ringed at night, Ngulia 24 Nov (GCB, DJP).

Ardea cinerea **Grey Heron N:** max of 178 at Lake Nakuru NP 28 Oct (RW).

Ardea goliath **Goliath Heron B:** 6 active nests during the year along the Mara River, Mara GR (ML).

Ardeola idae **Madagascar Squacco Heron R:** singles from May–Oct: Bamburi, Shimba Hills NP, Nairobi NP, Limuru Pond, Kiambu, Baringo, Embu, and Suguta Marmar. Extreme dates: 19 May–24 Oct.

Ardeola rufiventris **Rufous-bellied Heron R:** present throughout the year in Mara GR. Max 8 in late Aug (several observers).

Egretta ardesiaca **Black Heron R:** recorded from Lake Naivasha (Jan), Lake Baringo (Feb), Buffalo Springs GR (Feb), Limuru (Aug), Lake Nakuru and Amboseli NPs (Nov). NB: >300 Garsen late Apr with at least 20 pairs breeding (MC).

Egretta gularis **African Reef Heron R:** 1 Lake Nakuru NP 13 Nov (DEW).

Nycticorax nycticorax **Black-crowned Night Heron N:** >60 Mara GR Jun–Jul (ML), 132 Lake Nakuru NP 28 Oct (RW).

CICONIIDAE STORKS

Anastomus lamelligerus **Open-billed Stork ND:** >200 Loiengalani, Lake Turkana 12 Oct, >400 Aruba, Tsavo East NP 17 Dec (DJP, DAT).

Ciconia episcopus **Woolly-necked Stork MB:** recorded from Lake Elmenteita (Jan), Lake Nakuru NP (Apr), near Lokichoggio (Aug), Suguta Marmar (Aug), Lake Bogoria (Oct), Ngulia (Nov, Dec), and Mara GR (all year, including 2 pairs nesting) (many observers).

Ephippiorhynchus senegalensis **Saddle-billed Stork E:** 1 Ramisi, south coast, 5 Mar (MH).

Mycteria ibis **Yellow-billed Stork N:** >400 at Lake Nakuru NP throughout the year with a peak of 838 on 15 Jul (RW).

Bostrychia olivacea **Green Ibis R:** recorded from the Met Station on Mt Kenya (Feb), and Kieni Forest, Aberdares where 5 or 6 seen on 22 Jun (DAT, DF, RB).

Plegadis falcinellus **Glossy Ibis N:** >20 Lake Nakuru NP Apr–Aug, rising to >150 by 28 Oct (RW), >40 Lake Jipe 7 Feb (DAT).

Platalea alba **African Spoonbill N:** >100 Lake Nakuru NP Apr–Aug rising to >350 by 28 Oct (RW).

PHOENICOPTERIDAE FLAMINGOES

Phoeniconaias minor **Lesser Flamingo M:** >500 Sabaki River mouth 26 Oct (ND).

ANATIDAE DUCKS, GEESE

Dendrocygna bicolor **Fulvous Whistling Duck N:** >300 Tana Bridge, Jan–Mar (DAT), >150 near Murang'a early Feb (ND), >60 Lake Naivasha 17 Aug (DEW).

Anas capensis **Cape Wigeon N:** 20–40 Lake Nakuru NP during the year with a max of 48 on 28 Oct (RW).

Anas hottentota **Hottentot Teal N:** >40 Lake Nakuru NP 22 Jan with numbers dropping to 10–12 during Apr–Oct (RW).

Anas undulata **Yellow-billed Duck N:** >100 Lake Naivasha 13–14 Oct (several observers).

Plectopterus gambensis **Spur-winged Goose E:** 6 near Lokichoggio 11 Aug (DAT, MACC).

Sarkidiornis melanotos **Knob-billed Duck N:** >200 Tana Bridge 9 Mar (DAT).

Thalassornis leuconotus **White-backed Duck N:** >150 Lake Naivasha early Feb dropping to 40 in mid Oct (several observers). **E:** 1 along the Mara River, NW Mara GR 20 Nov (DEW).

ACCIPITRIDAE BIRDS OF PREY

Gypohierax angolensis **Palm-nut Vulture ME:** singles again reported from Buffalo Springs GR 13 Feb, Samburu GR 2–3 Aug; 1 in NW Mara GR 27 Oct was new for western Kenya (BWF, ML, DEW).

Torgos tracheliotus **Lappet-faced Vulture N:** a count of over 75 in the Mara GR 14 Aug included 24 in one group (DEW).

Circus ranivorus **African Marsh Harrier M:** only records reported were 2 near Kapsabet 24 Jan and 1 at Lake Naivasha 17 Aug (DF, DAT, DEW).

Circaetus fasciolatus **Southern Banded Snake Eagle R:** 1 Shimba Hills NP 27 Nov (DEW).

Accipiter minullus **Little Sparrowhawk R:** recorded from Nairobi (Jan, Mar), Nakuru (Jan), Mara GR (Jan), Hunter's Lodge (Jul, Dec), Timau (Aug), Samburu, Wamba, Hell's Gate NP and Shimba Hills NP (all Nov) (several observers).

Accipiter ovampensis **Ovampo Sparrowhawk R:** several records of singles throughout the year in the NW Mara GR (BWF, DAT); 1 freshly killed on road between Namanga and Bissel 30 Jul (DJP); 1 Naro Moru 10 Nov and 6 Dec (DJP, TS).

Accipiter rufiventris **Rufous-breasted Sparrowhawk M:** 1 Limuru 15 Jul (TS).

Butastur rufipennis **Grasshopper Buzzard M:** last recorded 28 Feb at Ololokwe; first recorded 9 Nov at Wamba (several observers).

Aviceda cuculoides **Cuckoo Hawk R:** singles Mara GR 31 May–23 Jun and 3 on 6 Jul (ML); pair near Thika 22 Jun (DF, DAT); singles Arabuko-Sokoke Forest 16 Jul–24 Aug (JHF).

Chelictinia riocourii **Swallow-tailed Kite R:** max count in the Kedong Valley 22 on 17 Aug (JH); 20–25 over Lotokipi plains near Lokichoggio 11–12 Aug (MACC, DAT); 2 Buffalo Springs GR 23 Nov (BWF).

Macheiramphus alcinus **Bat Hawk R:** recorded from Naivasha (Aug), Buffalo Springs GR (Aug), Diani Forest and Shimba Hills NP (Aug), and Arabuko-Sokoke Forest (Sep) (several observers).

FALCONIDAE FALCONS

Falco alopex **Fox Kestrel R:** 1 Huri Hills 4 Aug (GC *et al.*); several around the Mogila Hills near Lokichoggio 11–14 Aug (MACC, DAT); 3 near Loiengalani 12 Oct (ND).

Falco chicquera **Red-necked Falcon M:** singles from Buffalo Springs GR 11 Jul, Loiengalani 11 Oct and near the Kalacha waterhole (Marsabit district) 11–13 Aug (several observers).

Falco cuvieri **African Hobby R:** recorded from Lake Baringo (Jul), Kakamega town (Aug, Nov), and near Kisumu (Aug) (NJR, DEW).

Falco peregrinus **Peregrine Falcon DM:** 1 Kilifi 19 Aug (DEW).

Falco rupicoloides **White-eyed Kestrel M:** several Leroghi plateau near Maralal 3 Aug, the Lotokipi plains near Lokichoggio 11–12 Aug, and in the Huri Hills 6–9 Aug were probably of the northern race *fieldi* (several observers).

Falco tinnunculus **Common Kestrel MD:** 5 on the Leroghi plateau near Maralal 3 Aug (DEW).

PHASIANIDAE QUAILS, FRANCOLINS

Francolinus coqui **Coqui Francolin M:** 2 near Usengi, Lake Victoria 13 Sep (DAT).

Francolinus hildebrandti **Hildebrandt's Francolin M:** recorded from Maralal district 5 Feb and 13 Oct (ND).

NUMIDIDAE GUINEAFOWLS

Guttera edouardi **Crested Guineafowl E:** 4–5 near Flourspar mine in the Kerio Valley at 1550 m 9 Feb and 3 Mar (NW).

TURNICIDAE BUTTON QUAILS, QUAIL PLOVER

Ortyxelos meiffreni **Quail Plover R:** one collected W of Kitani Lodge, Tsavo West NP 28 Jan was in full breeding condition (RG). Singles around Aruba, Tsavo East NP in Feb and Dec (DF, DAT).

Turnix sylvatica **Button Quail M:** 1 Samburu GR 9 Nov (DEW), 2 Tsavo East NP 17 Dec (DAT).

RALLIDAE RAILS, CRAKES

Gallinula angulata **Lesser Moorhen M:** singles Mara GR 18 Jun and 14 Aug; 2 Lake Naivasha 23 Nov (ML, DEW).

Porphyrio alleni **Allen's Gallinule R:** a few in the Thika area Jul–Oct (TS) were the only records away from the normal Rift Valley sites.

Porphyrio porphyrio **Purple Gallinule E:** 1 Musiara swamp, Mara GR 25 Aug (ML).

Rallus caerulescens **African Water Rail MB:** an adult and a juvenile at The Ark (Aberdare NP) 30 Jul (DEW).

Sarothrura boehmi **Streaky-breasted Pygmy Crake S(B):** adult male Mungatsi (Mumias district) 27 May (TS, JHF). An all-black juvenile pygmy crake that flew into The Ark during the nght of 14 Jul was kept in captivity and later moulted into a male *S. boehmi* (IH, DAT).

Sarothrura elegans **Buff-spotted Pygmy Crake R:** singles from Kakamega Forest 19 Aug and 21 Sep (BWF, TS).

Sarothrura rufa **Red-chested Pygmy Crake R:** several calling Saiwa Swamp NP and Kerenget Dam near Kapenguria Apr, May and Jul (JHF, TS, DAT).

Fulica cristata **Red-knobbed Coot N:** max at Lake Naivasha >16 000 13–14 Oct (KWWG).

HELIORNITHIDAE FINFOOTS

Podica senegalensis **African Finfoot R:** female at Naro Moru 10 Mar (RB); 1 on river between Kilgoris and Lolgorien 12 Aug (DEW).

OTIDIDAE BUSTARDS

Eupodotis senegalensis **White-bellied Bustard E:** recorded from the Huri Hills and around Lokichoggio during Aug (MACC, DAT, GC *et al.*).

Neotis denhami **Denham's Bustard M:** nominate race: 2 Lotokipi plains near Lokichoggio 13–14 Aug (MACC, DAT).

Neotis heuglini **Heuglin's Bustard M:** male at Sala gate Tsavo East NP 6 Sep (JHF) was the most southerly record of this species for several years.

JACANIDAE JACANAS

Microparra capensis **Lesser Jacana R:** 1 Kerenget Dam near Kapenguria 23 Apr was the most northerly record to date (DAT).

ROSTRATULIDAE PAINTED SNIPES

Rostratula benghalensis **Painted Snipe R:** recorded from Mara GR (Jun, Aug, Dec), Lake Naivasha (Feb, Aug), Mogotio (Mar, Nov), and Lake Baringo (Jan, Feb, Jul, Sep). N: >20 at Buffalo Springs GR 12 Oct (several observers).

CHARADRIIDAE PLOVERS

Charadrius pallidus **Chestnut-banded Sandplover E:** several Amboseli NP late Nov (RB, SR) and 1 Lake Elmenteita 8–9 Dec (MACC, DJP *et al.*).

Vanellus armatus **Blacksmith Plover N:** max count at Lake Nakuru NP was 537 on 28 Oct (RW, KWWG).

Vanellus lugubris **Senegal Plover M:** 2 NW Mara GR 25 May (DAT).

Vanellus senegallus **Wattled Plover E:** 2 near Naivasha 22 Oct (ND).

RECURVIROSTRIDAE STILTS, AVOCETTS

Himantopus himantopus **Black-winged Stilt N:** max count at Lake Nakuru NP was 1975 on 28 Oct (RW, KWWG).

Recurvirostra avosetta **Avocet N:** max count at Lake Nakuru NP was 904 on 28 Oct (RW, KWWG).

BURHINIDAE THICKNEES

Burhinus senegalensis **Senegal Thicknee R:** 32 at mouth of the Molo River, Lake Baringo 17 Feb (BWF).

GLAREOLIDAE COURSERS, PRATINCOLES

Cursorius cursor **Cream-coloured Courser E:** several around Lokichoggio 11–12 Aug (MACC, DAT).

Rhinoptilus chalcopterus **Violet-tipped Courser R:** 1 Lake Jipe 6 Feb (DF, DAT), 1 Kitani, Tsavo West NP late May (RG), 1 Shombole 10 Jun (RB), 4 near Voi, Tsavo East NP 9 Jun (JHF).

LARIDAE GULLS, TERNS

Larus cirrocephalus **Grey-headed Gull B:** many bred Lake Elmenteita Mar–Jul (MACC). **N:** max count at Lake Nakuru NP was 6525 on 28 Oct but only *c.* 100 at Lake Naivasha 13–14 Oct (RW, KWWG).

Sterna anaethetus **Bridled Tern RB:** *c.* 20 pairs bred Whale Is, Watamu during Jul–Aug (JHF).

Sterna dougallii **Roseate Tern B:** *c.* 1500 pairs bred Whale Is, Watamu during Jul–Aug (JHF).

RYNCHOPIDAE SKIMMERS

Rynchops flavirostris **African Skimmer R:** 1 at Lake Baringo 17 Feb and 5 there Aug–Dec, 1 Aruba Dam, Tsavo East NP 6 Sep (several observers).

PTEROCLIDAE SANDGROUSE

Pterocles quadricinctus **Four-banded Sandgrouse R:** >75 Lokichoggio area 12–14 Aug, >50 Nasolot GR (Turkwell River) 21 Sep (MACC, DAT).

COLUMBIDAE PIGEONS

Columba delegorguei **Bronze-nape Pigeon M:** a female Arabuko-Sokoke Forest 19 Aug (DEW).

First coastal record for many years.

PSITTACIDAE PARROTS

Psittacus erithacus **Grey Parrot M:** 2 birds seen on occasions during the year in Kakamega Forest may possibly be the last remaining wild ones in Kenya (DAT).

MUSOPHAGIDAE TURACOS

Corythaixoides personata **Bare-faced Go-away-bird E:** 2 near Usengi (Lake Victoria) 13 Sep (DAT).

Tauraco porphyreolophus **Violet-crested Turaco M:** a few birds present throughout the year on the Mua and Ulu Hills (several observers).

CUCULIDAE CUCKOOS

Clamator levaillantii **Levaillant's Cuckoo R:** 1 Ngong road forest, Nairobi 26 May (RB), 1 Kisumu 11 Aug (DEW).

Cuculus gularis **African Cuckoo R:** singles Lake Baringo 17 Feb and 5 Aug, 2 Lake Elmenteita 14 Jul–21 Aug (BWF, DEW, MACC).

Ceuthmochares aereus **Yellowbill E:** 1 Samburu GR 29 Jun (TS), 1 Ibonia estate, Kiambu 21 and 27 Oct (JRPC) were both presumed to have been *australis*.

Centropus grillii **Black Coucal R:** records from NW Mara GR (Mar–Jul), Lambwe Valley GR 3 Jun, and Lake Baringo (Jul, Sep) (several observers).

TYTONIDAE BARN OWLS

Tyto alba **Barn Owl EB:** pair and nest in cave with 7 newly-hatched young in the Huri Hills 9 Aug (GC *et al.*). **M:** 1 caught at night at Ngulia 22 Dec (GCB *et al.*).

Tyto capensis **Cape Grass Owl R:** 1 seen regularly at The Ark during Aug (IH, MC).

STRIGIDAE OWLS

Bubo capensis **Cape Eagle Owl M:** singles at Hell's Gate NP 20 Aug and 23 Sep (TS).

Glaucidium tephronotum **Red-chested Owlet R:** calling before dawn most mornings in Trans-Mara forest (QDS 61C) during Jan–Feb (LAB).

Otus leucotis **White-faced Scops Owl E:** a few around Lokichoggio 11–12 Aug (MACC, DAT).

CAPRIMULGIDAE NIGHTJARS

Caprimulgus clarus **Slender-tailed Nightjar R:** 1 Lokichoggio 13 Aug (MACC, DAT); 4 ringed at Ngulia 22 Nov–21 Dec (GCB *et al.*).

Caprimulgus donaldsoni **Donaldson-Smith's Nightjar R:** 9 ringed at Ngulia 21–24 Nov (GCB *et al.*).

Caprimulgus fraenatus **Dusky Nightjar R:** several records from Nairobi NP between Jun and Aug (DAT), several Lake Elmenteita Jun–Oct (MACC), 10 ringed Ngulia 22 Nov–22 Dec (GCB *et al.*).

Caprimulgus inornatus **Plain Nightjar R:** 1 near Lokichoggio 14 Aug (MACC, DAT), 1 Kerio Valley below Kabarnet 20 Oct (NW), 31 ringed Ngulia 21 Nov–21 Dec with most between 21 and 24 Nov (GCB *et al.*).

Macrodipteryx longipennis **Standard-winged Nightjar R:** adult male Lake Baringo 2 Nov (BWF).

Macrodipteryx vexillarius **Pennant-winged Nightjar R:** a few nightly at The Ark 18–20 Jul, singles Lake Naivasha 23 Jul and 17 Aug (several observers).

APODIDAE SWIFTS

Apus barbatus **Black Swift R:** >250 near Nanyuki 1 Aug (DEW), >100 Mara GR 15 Aug (DEW).

Apus horus **Horus Swift R:** >300 Lake Nakuru NP 18 Mar (DAT).

Apus melba **Alpine Swift M:** 1 Maralal 14 Oct (ND).

Schoutedenapus myoptilus **Scarce Swift R:** a few Kiambu district Jul–Nov (JRPC), flocks of up to 50 around Kakamega 9–11 Aug (DEW), 1 Ngurumans 10 Dec (DAT), >10 Tsavo West NP 19 Dec (DAT).

ALCEDINIDAE KINGFISHERS

Ceryle maxima **Giant Kingfisher E:** 1 Kilifi Creek 1 Apr (JHF), 2 Kitich, Mathews Range 13–16 May (SR).

Alcedo quadribrachys **Shining Blue Kingfisher S(A):** 1 on stream N of Alupe, Busia district 21 Aug (BWF).

Third Kenya record.

Halcyon leucocephala **Grey-headed Kingfisher M:** 7 ringed (2 at night) at Ngulia 21–28 Nov (GCB *et al.*).

Halcyon senegaloides **Mangrove Kingfisher N:** >50 in mangroves around Vanga on Kenya–Tanzania border 29 April (TS).

Ispidina picta **Pygmy Kingfisher E:** 1 near Lokichoggio 13 Aug (MACC, DAT), 2–3 around Loiengalani 10–12 Oct (ND), 2 of the nominate race ringed Ngulia 23 Nov were the first for the site (GCB *et al.*).

MEROPIDAE BEE-EATERS

Merops nubicus **Carmine Bee-eater (records away from usual sites) M:** 2 Lake Baringo 5 Jan (DKR), several Lake Baringo–Lake Bogoria 12 Nov (DEW), 3 Kisumu 18 Nov (DEW).

Merops revoilii **Somali Bee-eater M:** 1 near Manyani gate, Tsavo East NP 3 Feb (DF, DAT).

Merops superciliosus **Madagascar Bee-eater E:** several around Lokichoggio 12–14 Aug (MACC, DAT).

CORACIIDAE ROLLERS

Coracias abyssinica **Abyssinian Roller R:** 1 near Moi's Bridge 19 Jan (BWF), a few Nasolot GR (Turkwell River) 21–23 Sep (MACC).

PHOENICULIDAE WOOD HOOPOES

Phoeniculus granti **Violet Wood Hoopoe E:** 4 Lake Baringo 5 Aug (DEW), several around Lokichoggio 12–14 Aug (MACC, DAT), a few Nasolot GR (Turkwell River) 21–23 Sep (MACC).

BUCEROTIDAE HORNBILLS

Tockus hemprichii **Hemprich's Hornbill R (away from Lake Baringo):** 3 near Mogotio flying towards Menengai Crater 8 Apr (DAT).

Bucorvus abyssinicus **Abyssinian Ground Hornbill R:** several groups on Lotokipi plains near Lokichoggio 12–14 Aug (MACC, DAT).

CAPITONIDAE BARBETS

Buccanodon duchaillui **Yellow-spotted Barbet E (records away from Kakamega):** singles near Fluospar mine in Kerio Valley (alt 1300 m) 21 Oct (NW), and at Kericho Arboretum 6 Nov (BWF).

Trachylaemus purpuratus **Yellow-billed Barbet E:** recorded from the Trans-Mara forest (QDS 61C) during Jan and Feb (LAB).

Pogoniulus leucomystax **Moustached Green Tinkerbird M:** recorded from the Ngurumans (Sep, Dec), Tambach, Tigoni and Timau (all Sep) (SR, DAT).

INDICATORIDAE HONEYGUIDES

Indicator conirostris **Thick-billed Honeyguide M:** 1 Kakamega 20 Oct (ND).

Indicator meliphilus **Pallid Honeyguide R:** recorded from Kongalai escarpment 18 Jan (BWF), Shimba Hills NP 15 Apr (RB), and Kibwezi Forest 19 Nov (BWF).

Indicator variegatus **Scaly-throated Honeyguide M:** recorded from Lake Nakuru (Jan), Arabuko-Sokoke Forest (Feb), Kianyaga (Jun), Ngurumans (Sep), Kakamega (Sep) and Boni Forest (Sep) (several observers).

Prodotiscus regulus **Wahlberg's Honeybird M:** 1 Lake Nakuru NP 22 Jan (DF, DAT).

PICIDAE WOODPECKERS

Dendropicos poecilolaemus **Uganda Spotted Woodpecker R:** 1 Mungatsi (Mumias district) 27 May (TS, JHF).

Picoides obsoletus **Brown-backed Woodpecker R:** recorded from Kiambu district (Jan–Mar, Jun–Oct), Nairobi suburbs (Mar), and at 3000 m in *Hagenia* forest on Mt Kenya (Sep) (several observers).

ALAUDIDAE LARKS

Calandrella personata **Masked Lark M:** 2 in the Huri Hills 6 Aug (GC *et al.*).

Calandrella somalica **Rufous Short-toed Lark RN:** hundreds present in Nairobi NP during Aug when the park was very dry (DAT).

Eremopterix leucotis **Chestnut-backed Sparrow Lark M:** groups of >30 around Aruba, Tsavo East NP during Feb and Aug (DAT).

Eremopterix signata **Chestnut-headed Sparrow Lark M:** >30 Buffalo Springs GR 15 Aug (BWF), >200 N of Kapedo 21 Oct (RB).

Galerida fremantlii **Short-tailed Lark N:** >75 Leroghi plains near Maralal 3 Aug were presumably of the race *megaensis* (DEW).

Mirafra albicauda **Northern White-tailed Lark E:** singles in the western Mara GR 30 Jan and 24 Aug (DAT, BWF).

Mirafra cantillans **Singing Bush Lark M:** a few singing at Buffalo Springs GR and around Aruba, Tsavo East NP mid Feb (BWF, DAT); 8 on the Leroghi plains near Maralal 13 Jul (NR); hundreds around Aruba, Tsavo East NP late Aug; an immature caught and ringed at night Ngulia, 20 Nov (GCB *et al.*).

Mirafra hypermetra **Red-winged Bush Lark E:** 2–3 near Lokichoggio close to the Kenya–Sudan border 14 Aug were presumed to be of the race *kidepoensis* (MACC, DAT); 4 Huri Hills 7–8 Aug (GC *et al.*).

HIRUNDINIDAE SWALLOWS AND MARTINS

Hirundo atrocaerulea **Blue Swallow R:** extreme dates at Mungatsi (Mumias district) were 25 May and 21 Aug (several observers).

DICRURIDAE DRONGOS

Dicrurus adsimilis coracinus **Velvet-mantled Drongo M:** 1 Kakamega Forest 20 Oct (ND); considered a good species by some authorities.

ORIOLIDAE ORIOLES

Oriolus auratus **African Golden Oriole M:** an immature Nairobi NP 22 Jul (MO).

Oriolus chlorocephalus **Green-headed Oriole M:** 1 in mixed species flock Arabuko-Sokoke Forest 5 Feb (DF, DAT), pair and a juvenile Shimba Hills NP 1–2 Sep (DAT).

CORVIDAE CROWS

Ptilostomus afer **Piapiac M:** a few (max 5) near Busia and Alupe during Aug, Nov and Dec (several observers).

PARIDAE TITS

Parus albiventris **White-bellied Tit E:** 1 Lake Baringo 5 Aug (DEW).

REMIZIDAE PENDULINE TITS

Remiz caroli **African Penduline Tit MB:** a pair (race *sharpei*) building a nest near Cottar's Mara Camp 27 Aug (BWF); a pair (race *sharpei*) Ngurumans, 10 Dec (DAT).

Remiz musculus **Mouse-coloured Penduline Tit E:** 1 Tana Bridge 5 Nov (DEW).

SALPORNITHIDAE SPOTTED CREEPER

Salpornis spilonota **Spotted Creeper R:** singles near Kapenguria 17 Jan and 19 Jun (BWF, MACC). There have been very few records in recent years because of habitat loss.

TIMALIIDAE BABBLERS

Trichastoma fulvescens **Brown Illadopsis N:** >50 Kakamega Forest 11–12 Sep (DAT).

Trichastoma pyrrhopterum **Mountain Illadopsis R:** several Trans-Mara forest (QDS 61C) Jan–Feb (LAB). Other records from Saiwa Swamp NP (Jan and Sep) and Kericho Arboretum (Nov) (several observers).

Trichastoma rufipennis **Pale-breasted Illadopsis E:** 1 caught in Trans-Mara forest (QDS 61C) 15 Feb (LAB). See *Scopus* 14: 72.

Turdoides hindei **Hinde's Pied Babbler R:** group of 5 around Kianyaga township 23 Jun and 4 Sep (DAT); 1 near Tana Bridge 30 Jul (DEW).

CAMPEPHAGIDAE CUCKOO SHRIKES

Campephaga flava **Black Cuckoo Shrike M:** several Jan–Mar records from Mountain

Lodge, Lake Nakuru NP, Mara GR and Tsavo West NP (DAT); several in canopy flocks in Kakamega Forest 10–11 Aug (DEW); 4 ringed Ngulia Nov–Dec, including 1 caught at night on 26 Nov (GCB *et al.*).

Campephaga phoenicea **Red-shouldered Cuckoo Shrike M:** pair resident at Mungatsi (Mumias district) throughout the year (several observers).

Coracina caesia **Grey Cuckoo Shrike ME:** 1 Shimba Hills NP 1 May (TS), 1 Loita Hills 11 Dec (DAT), 1 Lake Elmenteita 16 Dec (MACC).

PYCNONOTIDAE BULBULS

Andropadus gracilis **Little Grey Greenbul R:** a few Kakamega Forest 11–12 Sep (DAT).

Andropadus importunus **Zanzibar Sombre Greenbul M:** several, including many juveniles, showing yellow eye-rings, ringed near Mtito Andei mid Feb (DJP, DAT).

Andropadus masukuensis **Shelley's Greenbul E:** 1 in mixed species party Kericho Arboretum 6 Nov (BWF).

Andropadus tephrolaemus nigriceps **Mountain Greenbul M:** common in the Ngurumans Sep and Dec (SR, DAT). Considered by some authorities to warrant specific status.

Chlorocichla flaviventris **Yellow-bellied Greenbul E:** 1 Meru Forest 12 Feb (BWF).

Phyllastrephus baumanni **Toro Olive Greenbul R:** 1 Kakamega Forest 12 Sep (DAT).

TURDIDAE THRUSHES

Alethe poliocephala **Brown-chested Alethe E:** present in the Trans-Mara forest (QDS 61C) Jan and Feb (LAB).

Cercomela familiaris **Red-tailed Chat E:** 1 Huri Hills 7 Aug, presumably of the race *omoensis* (GC *et al.*).

Cercomela scotocerca **Brown-tailed Rock Thrush E:** several around Lokichoggio 13–14 Aug (MACC, DAT).

Cercotrichas hartlaubi **Brown-backed Scrub Robin R:** recorded from Kiambu district (Jun–Nov), Kianyaga (Sep), Naro Moru (Aug, Nov) and Mungatsi, Mumias district (Jan, Jul) (several observers).

Cossypha natalensis **Red-capped Robin Chat M:** resident throughout the year in wooded areas of the NW Mara GR (BWF), 1 in Mathews Range mid May (SR), newly fledged juvenile Arabuko-Sokoke Forest 30 Aug (DAT), 1 near Fluospar mine, Kerio Valley 4 Oct (NW), an adult caught and ringed at night Ngulia 15 Nov was the second record for the site (GCB *et al.*), a few in the Ngurumans 10–11 Dec (DAT).

Cossypha niveicapilla **Snowy-headed Robin Chat E:** present in the Trans-Mara forest (QDS 61C) in Jan and Feb (LAB).

Dryocichloides poliopterus **Grey-winged Ground Robin RN:** resident all year in Saiwa Swamp NP, difficult to estimate numbers but at least 10 seen together after heavy rain on 8 Sep (DAT).

Monticola rufocinerea **Little Rock Thrush R:** 1 singing in Ngong Hills 10 Feb (BWF), pair Kakamega 7 Apr (DAT), 1 Hell's Gate NP 17 Aug and 23 Nov (DEW), a near Kapenguria 9 Sep (DAT).

Oenanthe bottae **Red-breasted Wheatear R:** several at edge of Lotokipi plains near Lokichoggio 13–14 Aug (MACC, DAT).

Oenanthe lugens **Mourning Wheatear E:** present near Fluospar mine, Kerio Valley during Nov and Dec (NW).

Sheppardia aequatorialis **Equatorial Akalat E:** present in Trans-Mara Forest (QDS 61C) during Jan and Feb (LAB).

Sheppardia gunningi **East Coast Akalat R:** recorded from Arabuko-Sokoke Forest in Aug, Sep and Dec (JHF, TS).

Turdus fischeri **Spotted Ground Thrush R:** 1 Diani Forest 21 Aug (DEW), >10 Gede Forest 29–30 Aug (DAT).

Turdus pelios **African Thrush M:** 1 Lake Elmenteita 8 Aug (MACC).

Turdus piaggiae **Abyssinian Ground Thrush E:** present in the Trans-Mara Forest (QDS 61C) Jan and Feb (LAB).

Turdus tephronotus **Bare-eyed Thrush M:** 1 Mwea National Reserve 28 Jan (RB), 1 near Kiunga 23 Sep (DAT), pair and nest Samburu Lodge 9 Nov (DEW).

SYLVIIDAE WARBLERS

Acrocephalus baeticatus **African Reed Warbler M:** 8 ringed Lake Naivasha Jan–Feb (SJT).

Acrocephalus gracilirostris **Lesser Swamp Warbler MN:** 94 ringed Lake Naivasha Jan–Feb, while during the period 2–5 Mar a marked influx/passage noted with 140 new birds ringed (SJT).

Apalis alticola **Brown-headed Apalis E:** pair Entasekera village in the Ngurumans 26–27 Sep (SR), 3 birds in same area 9–10 Dec (DAT). See *Scopus* 16: 57–58.

First records for Kenya.

Bradypterus baboecala **Little Rush Warbler M:** 18 ringed at Lake Naivasha Feb–Mar (SJT), 3 N of Mombasa 28 Jul (NR).

Bradypterus barratti **Evergreen Forest Warbler E:** present Trans-Mara Forest (QDS 61C) Jan and Feb (LAB).

Bradypterus carpalis **White-winged Warbler M:** several calling from papyrus swamp at Kisumu 14 Sep (DAT).

Bradypterus cinnamomeus **Cinnamon Bracken Warbler E:** present in Trans-Mara Forest (QDS 61C) Jan and Feb (LAB).

Chloropeta gracilirostris **Papyrus Yellow Warbler R:** 1 Kisumu Yacht Club area 3 Dec (BWF).

Chloropeta similis **Mountain Yellow Warbler E:** present in the Trans-Mara Forest (QDS 61C) Jan and Feb (LAB).

Cisticola aberrans **Rock-loving Cisticola R:** 3 pairs present all year on the Oloololo escarpment NW Mara GR (BWF).

Cisticola brachyptera **Siffling Cisticola E:** pair near Kapenguria 23 Apr (DAT).

Cisticola ruficeps **Red-pate Cisticola E:** 2 (race *mongalla*) in mixed feeding party near Lokichoggio 13–14 Aug (MACC, DAT), see *Scopus* 15: 48.

First record for Kenya of a bird considered by some authorities as warranting specific status.

Eremomela pusilla **Green-backed Eremomela M:** party of 5 in Kerio Valley below Kabarnet 24 Jan (DF, DAT).

Heliolais erythroptera **Red-winged Warbler R:** pair still present at Awasi Jan–Apr, though thereafter only 1 seen—on 6 Nov (several observers).

Phyllolais pulchella **Buff-bellied Warbler E:** 2 near Lokichoggio 12 Aug (MACC, DAT).

Prinia somalica **Pale Prinia M:** 1 singing Ngulia airstrip 19 Nov (DJP).

Prinia subflava **Tawny-flanked Prinia E:** 1 (presumed nominate race) near Lokichoggio 14 Aug (MACC, DAT).

Sylvietta leucophrys **White-browed Crombec M:** several Kakamega Forest 9 Aug (DEW).

MUSCICAPIDAE FLYCATCHERS

Melaenornis edolioides **Black Flycatcher E:** 2 at Lake Baringo 29 Mar were new for the area (TS).

Muscicapa caerulescens **Ashy Flycatcher NE:** 11 in Diani Forest 21 Aug including 7 in one group (DEW), an immature caught and ringed Ngulia 24 Nov was new for the area (GCB *et al.*).

Muscicapa gambagae **Gambaga Flycatcher S(B):** at least two pairs breeding in the Kerio Valley below Kabarnet Mar–Apr (DKR, DAT), see *Scopus* 15: 137. A juvenile caught and ringed at night Ngulia 24 Nov (GCB *et al.*).

Muscicapa lendu **Chapin's Flycatcher S(B):** 2–3 seen regularly in Kakamega Forest throughout the year (several observers).

Myioparus plumbeus **Lead-coloured Flycatcher M:** singles reported from the Arabuko-Sokoke Forest 26 Jun and 25 Oct (JHF, ND).

Batis minor **Black-headed Batis E:** 1 near Chebloch, Kerio Valley 18 May (TS).

Batis orientalis **Grey-headed Batis R:** pair near Kapenguria 23 Apr and 28 May; several around Lokichoggio 12–15 Aug, 1 Kerio Valley below Kabarnet 7 Sep (several observers).

Bias musicus **Black and White Flycatcher R:** singles Meru Forest 10 Jul, 13 Aug, 17 Aug, 12 Sep and 29 Oct (several observers).

Platysteira peltata **Black-throated Wattle-eye M:** 1 near Mountain Lodge 2 Feb (ND), several in the Ngurumans 9–11 Dec (DAT).

MOTACILLIDAE WAGTAILS AND PIPITS

Anthus caffer **Little Tawny Pipit R:** 1 NW Mara GR 20 Mar (DAT).

Anthus similis **Long-billed Pipit E:** several around Lokichoggio 12–14 Aug (MACC, DAT).

Anthus sokokensis **Sokoke Pipit R:** several sightings Arabuko-Sokoke Forest 15–26 Jun, 26 Jul (JHF).

Motacilla clara **Mountain Wagtail M:** pair Hell's Gate NP 17 Aug (DEW).

MALACONOTIDAE BUSH SHRIKES

Dryoscopus gambensis **Northern Puffback M:** pair Kisumu 12 Aug (DEW).

Dryoscopus pringlii **Pringle's Puffback E:** 1 in dry scrub between Ngong Hills and Olorgesaille 22 Nov (BWF).

Laniarius barbarus **Black-headed Gonolek E:** fairly common Nasolot GR (Turkwell River) late Sep (MACC).

Laniarius mufumbiri **Papyrus Gonolek R:** several recorded throughout the year from Kisumu and Usengi papyrus swamps (several observers).

Laniarius ruficeps **Red-naped Bush Shrike R:** several in thick bush near Mtito Andei 22 Feb (DJP, DAT). Several in thick coastal scrub south of Kiunga 23 Sep (DAT) presumed to have been of the race *kismayensis*.

Malaconotus multicolor **Many-coloured Bush Shrike E:** present in the Trans-Mara Forest (QDS 61C) Jan and Feb (LAB). M: also recorded from Kabarnet Forest (Apr) and Meru Forest (Sep) (several observers).

LANIIDAE SHRIKES

Corvinella melanoleuca **Magpie Shrike N:** present throughout the year near Cottar's Mara Camp, E Mara GR; max 16 on 27 Aug mobbing a snake (BWF).

PRIONOPIDAE HELMET SHRIKES

Prionops poliolopha **Grey-crested Helmet Shrike R:** >6 Lake Nakuru NP 22 Jan (DF, DAT).

STURNIDAE STARLINGS

Cinnyricinclus femoralis **Abbott's Starling R:** >15 (adults and juveniles) Kieni Forest 23 Jun; pair with 1 juvenile Naro Moru gate, Mt Kenya NP 5 and 11 Sep (DF, DAT, TS).

Creatophora cinerea **Wattled Starling M:** a few in coastal scrub S of Kiunga 23 Sep (DAT); 3 caught and ringed at night at Ngulia 24 and 26 Nov (GCB *et al.*).

Lamprotornis chalcurus **Bronze-tailed Starling RE:** a few near the Fluospar mine in Kerio Valley in Jan (NW).

Lamprotornis corruscus **Black-breasted Glossy Starling N:** influx of many hundreds into the Arabuko-Sokoke Forest noted 23 Aug (JHF).

Lamprotornis purpureus **Purple Glossy Starling R:** present in small numbers at Mungatsi (Mumias district) 27 May and 10 Sep and near Alupe (Busia district) 5 Nov (several observers).

Lamprotornis splendidus **Splendid Glossy Starling M:** >20 Saiwa Swamp NP 22 Apr (DAT), 15 near Kapenguria 28 May (TS), a pair near Alupe (Busia district) with *L. purpureus* 5 Nov (BWF).

Onychognathus salvadorii **Bristle-crowned Starling E:** 3 Huri Hills 3 Aug (GC *et al.*).

Poeoptera kenricki **Kenrick's Starling N:** >10 Mountain Lodge 20 Jan (DF, DAT); hundreds Meru forest Jul and Aug (several observers).

Poeoptera stuhlmanni **Stuhlmann's Starling E:** several in forest N of Eldama Ravine 15 May (MACC).

Speculipastor bicolor **Magpie Starling R:** a few in thick coastal scrub S of Kiunga 23 Sep (DAT).

Spreo shelleyi **Shelley's Starling R:** several (including juveniles) around Lokichoggio 12–14 Aug (MACC, DAT).

NECTARINIIDAE SUNBIRDS

Anthreptes longuemarei **Violet-backed Sunbird M:** pair near Kapenguria 17 Jan and 23 Apr (several observers).

Anthreptes neglectus **Uluguru Violet-backed Sunbird M:** 1 Shimba Hills NP 2 Sep (DAT).

Anthreptes platurus **Pygmy Sunbird S(B):** a pair near the Fluospar mine, Kerio Valley alt 1550 m 21 Oct (NW).

Nectarinia habessinica **Shining Sunbird R:** singles Samburu GR 12 Jul (NR) and 2 Aug (DEW); several around Lokichoggio 12–14 Aug (MACC, DAT).

Nectarinia pulchella **Beautiful Sunbird E:** 1 Lake Elmenteita 19 Oct (MACC), 1 Ibonia estate (Kiambu district) 30 Oct–1 Nov (JRPC).

Nectarinia superba **Superb Sunbird E:** a pair Mungatsi (Mumias district) 2 Dec (BWF).

The first Kenya record for over 50 years.

PLOCEIDAE WEAVERS

Anaplectes rubriceps **Red-headed Weaver E:** 9 males and 2 females (race *jubaensis*) building nests in baobab tree S of Kiunga 23 Sep (DAT).

First record of this race from Kenya; see Scopus *15: 49.*

Anomalospiza imberbis **Parasitic Weaver R:** 1 Mara GR mid Feb (ND), several in Mumias and Kakamega districts May–Jul (NR, TS).

Euplectes hartlaubii **Marsh Widowbird E:** 1 near Kapenguria (Apr–May) was north of the normal range and at a much higher altitude (DAT, TS).

Ploceus golandi **Clarke's Weaver R:** several records from the Arabuko-Sokoke Forest 13 and 29 Jun, 19 and 30 Aug (JHF *et al.*).

Ploceus heuglini **Heuglin's Masked Weaver R:** male near Kapenguria 23 Apr (DAT), 5 males and 1 female at Kiminini colony (near Kitale) 28 May (JAF, TS).

Ploceus luteolus **Little Weaver E:** records of single males (race *kavirondensis*) in NW Mara GR 4 Nov and in E Mara GR 7 Dec (BWF, DAT).

Bubalornis niger **Red-billed Buffalo Weaver E:** 1 Ahero Rice Scheme 17 Mar (DAT).

Passer castanopterus **Somali Sparrow R:** >20 around Lokichoggio Catholic Mission 10–12 Oct (ND).

Vidua hypocherina **Steel Blue Whydah ME:** 2–3 around Olorgesailie 8 Mar (DAT), 1 near Kisumu 17 Mar (DAT), 1 Huri Hills 9 Aug (GC *et al.*).

ESTRILDIDAE WAXBILLS

Estrilda erythronotus **Black-cheeked Waxbill E:** several (race *charmosyna*) around Lokichoggio 12 Aug (MACC, DAT).

Estrilda troglodytes **Black-rumped Waxbill M:** recorded from Mungatsi (Mumias district) 20 Feb and 28 Nov and from Ahero Rice Scheme 27 Jan (BWF, DF, DAT, TS).

Lagonosticta rhodopareia **Jameson's Firefinch M:** recorded from Ngulia 7 Jan and 20 Dec, Mtito Andei 9 Oct, Msambweni (south coast) late Apr (TS, SJT, DAT).

Mandingoa nitidula **Green-backed Twinspot E:** 1 Ng'angao Forest, Taita Hills 25 Feb (RB), 1 Windsor Country Club, Kiambu district 28 Nov (JRPC).

Nigrita canicapilla **Grey-headed Negro Finch M:** 1 Ibonia estate, Kiambu district 1 Jul (JRPC).

Ortygospiza locustella **Locust Finch E:** flock of 25 in grassland near Alupe (Kenya-Uganda border, Busia district) 31 Aug, presumed race *uelensis* (TS); see *Scopus* 15: 133.

First Kenya record.

Pyrenestes ostrinus **Black-bellied Seed-cracker E:** a pair Mungatsi (Mumias district) 22 Sep (TS); see *Scopus* 15: 133.

First Kenya record.

Pytilia afra **Orange-winged Pytilia R:** flock of >6 Golini, Shimba Hills at *c.* 300 m Jan and Feb (MR), and 1 there on 20 Dec (MR).

Amadina fasciata **Cut-throat E:** common around Lokichoggio 11–14 Aug (MACC, DAT).

FRINGILLIDAE BUNTINGS, CANARIES, SEED-EATERS

Emberiza striolata **House Bunting M:** several around Loiengalani 10–12 Oct (ND).

Linurgus olivaceus **Oriole Finch M:** 1 Kakamega Forest 20 Oct (ND).

Serinus donaldsoni **Grosbeak Canary E:** race *buchanani*: 2 E Mara GR 22 Jul (NR), 2 Lukenya (Athi River) 24 Jul (NR). race *donaldsoni* present Nasolot GR (Turkwell River) 22–23 Sep (MACC).

Serinus koliensis **Papyrus Canary R:** records of up to 10 birds in Kisumu papyrus swamps Mar, Jul, Aug, Sep and Nov (several observers).

Serinus reichardi **Stripe-breasted Seed-eater R:** several in song at top of Kongalai escarpment 22–23 Apr, 28 May, 9 Sep; 1 at Timau/Isiolo junction 17 Aug (several observers).

Kenya Palaearctic species

Ixobrychus m. minutus **Little Bittern R:** singles Lake Naivasha 13 Jan, 4 Mar (SJT), 1 near Loiengalani 11 Oct (ND).

Ciconia ciconia **White Stork N:** >2000 Mara GR 24 Feb, >1000 Nakuru 18 Mar, >1000 Kakamega 20 Mar; *c.* 50 and >14 oversummering in Mara GR 27 Jul and 13 Aug; >2400 Kisumu 17 Nov, >1500 Mara GR 22 Nov (PRAD, BWF, DKR, DEW).

Ciconia nigra **Black Stork R:** singles Nairobi NP 11 and 21 Jan, 2 Oct; 2 Buffalo Springs GR 7 Oct, 6 Maralal 14 Oct, 1 Kapedo 21 Oct, 1 Kiambu 3 Nov (RB, JRPC, ND, DKR, TS, SJT).

Platalea leucorodia **Eurasian Spoonbill R:** singles Lake Naivasha 27 Feb and Lake Nakuru 24 Aug (BWF).

Circus macrourus **Pallid Harrier D:** early one at Lake Baringo 17 Sep (TS).

Circus pygarus **Montagu's Harrier D:** adult male, Mara GR 27 Jul (PRAD).

Accipiter nisus **Eurasian Sparrowhawk S(B):** 1 female Ngulia 20 Dec (KM, DJP, DAT).

Aquila heliaca **Imperial Eagle S(B):** juvenile Voi 22 Feb (DJP, DAT).

Aquila clanga **Greater Spotted Eagle S(B):** adult Timau 7 Nov (DEW).

Aquila pomarina **Lesser Spotted Eagle R:** recorded 19 Oct–7 Dec from Lake Elmenteita, Nairobi, Kilgoris, Timau, Samburu and Ngulia. N: max: 6 at Ngulia 18 Nov (several observers).

Buteo rufinus **Long-legged Buzzard S(B):** 1 Voi 22 Feb (DJP, DAT) and 1 near Naro Moru 22 Nov (TS).

Hieraaetus pennatus **Booted Eagle R:** recorded from Lake Nakuru NP (Jan), Mtito Andei and Voi (Mar), Nairobi NP (Oct), Buffalo Springs GR (Oct), Shimba Hills NP (Oct), Ngulia (Dec) (several observers).

Pernis apivorus **Honey Buzzard R:** singles recorded from Buffalo Springs GR (Feb), Voi and Taita Hills (Feb), near Meru (Oct), Lake Nakuru NP (Oct), Lake Jipe (Nov) (several observers).

Falco amurensis **Eastern Red-footed Falcon R:** marked passage across Naro Moru plains 13 Mar (DKR, DT); 1 Kiboko 17 Nov (GCB), 15 near Ngulia 17 Nov and 2–3 there 23–25 Nov (BWF, DH, DJP), 1 Solio Ranch 6 Dec (DJP).

Falco cherrug **Saker Falcon S(B):** 1 on Magadi side of the Ngurumans at 2000 m on 28 Oct (AB).

Falco concolor **Sooty Falcon R:** 1 Kedong Valley 23 Mar (DKR), 2 Buffalo Springs GR 28 Oct (BWF), singles Nyeri and Samburu GR 6 and 8 Nov (DEW), 1 Kiboko 17 Nov (GCB), 2 Ngulia 22 Nov (DJP, DH *et al.*), 1 Ngulia 26 Nov (DJP).

Falco eleonorae **Eleonora's Falcon R:** singles at Buffalo Springs GR 28 Oct and Lake Nakuru NP 1 Nov (BWF, DKR).

Falco pelegrinoides **Barbary Falcon S(A):** adult perched at Ngulia 22 Dec (DJP, DH, *et al.*).

Falco subbuteo **Eurasian Hobby D:** a late bird at Kitale 28 May (TS).

Crex crex **Corncrake R:** singles caught and ringed Ngulia 5 Jan and 14 Dec (SJT, DJP, GCB, DH); 1 in rank grass near Nyaharuru (Thomson's Falls) 28 Nov (BWF).

Haematopus ostralegus **Oystercatcher R:** 1 Mida Creek 1 Sep (RB).

Charadrius asiaticus **Caspian Plover D:** early flocks (>30) Mara GR from 12 Aug (DKR).

Charadrius alexandrinus **Kentish Plover RE:** 1 Lake Baringo 7 Dec, 1 Lake Elmenteita 8–9 Dec (MACC, DJP, DH).

Charadrius mongolus **Mongolian Sandplover E inland:** 1 Mara GR 15 Aug (DEW), 1 Lake Elmenteita 8–9 Dec (MACC, DJP, DH *et al.*).

Pluvialis squatarola **Grey Plover inland:** 1 Lake Baringo 12 Nov (DEW), 2 Lake Nakuru NP 4 Dec (BWF), 1 Mara GR in almost full breeding plumage 5 Dec (BWF), 1 Lake Elmenteita 8–9 Dec (MACC, DJP, DH).

Numenius arquata **Curlew inland:** 3 Lake Elmenteita 21 Oct (MACC).

Tringa erythropus **Spotted Redshank E away from usual sites:** 1 near Naro Moru Jan–Mar (DAT), singles Limuru Pond, Nairobi NP, Lake Magadi (Feb) (BWF), early arrival at Mida Creek 1 Sep (RB); singles Ahero Rice Scheme and Amboseli NP 18 and 25 Nov (DEW). N: >10 Lake Nakuru NP 22 Jan (DF, DAT).

Tringa totanus **Redshank R:** 1 Mida Creek 5 Feb (DF, DAT), 1 Loiengalani 12 Oct (ND), 1 Lake Nakuru NP 4 Dec (BWF).

Xenus cinereus **Terek Sandpiper inland:** 1 Lake Elmenteita 7 Sep (MACC), 1 Lake Baringo 29 Nov (BWF) and to 7 Dec (DJP, DH).

Gallinago media **Great Snipe RD:** 2 Mungatsi (Mumias district) 27 May and 1 there 28 May (TS, JHF).

Calidris alba **Sanderling inland:** 1 Lake Naivasha 23 Nov (DEW).

Calidris temminckii **Temminck's Stint E away from usual Rift Valley sites:** 2 Ahero Rice Scheme 27 Jan (DF, DAT), 1 Amboseli NP 25 Nov (RB).

Limosa lapponica **Bar-tailed Godwit N:** 11 Mida Creek 29 Sep was a high count (TS).

Limosa limosa **Black-tailed Godwit N:** 7 Lake Nakuru NP 7 Aug may have oversummered (DEW), >40 there by 23 Nov (DEW). Small numbers also reported from Lake Elmenteita and Ahero Rice Scheme (DJP).

Phalaropus lobatus **Red-necked Phalarope R:** regularly *c.* 8 km off Kilifi late Dec with max >130 on 28 Dec (TS).

Stercorarius **sp. skua:** a first-year bird, probably *S. parasiticus* Arctic Skua at Lake Nakuru NP 28 Oct and 13 Nov (RW, DEW).

Larus ridibundus **Black-headed Gull N:** >200 Lake Nakuru NP 21 Feb, many in full breeding plumage (BWF).

Sterna albifrons **Little Tern E:** 1 adult Lake Baringo 18 Aug (BWF).

Streptopelia turtur **Turtle Dove S(A):** 2 at Loiengalani 11 Oct (ND).

Fifth Kenya record.

Otus scops **Scops Owl R:** 1 caught and ringed Ngulia 22 Dec (GCB *et al.*).

Cuculus poliocephalus **Asian Lesser Cuckoo R:** first-year birds caught and ringed Ngulia 27 Nov and 19 Dec (GCB, DJP).

Caprimulgus europaeus **Eurasian Nightjar R:** 67 ringed Ngulia 20 Nov–19 Dec of which 47 were between 20 and 21 Nov (GCB, DJP).

Apus apus **Eurasian Swift M:** 20 seen 25–30 km out to sea off Kilifi 26 Dec (TS).

Upupa epops epops **Hoopoe R:** 1 Buffalo Springs GR 5 Dec (DJP).

Coracias garrulus **Eurasian Roller E:** 1 Kiambu 17 Feb was an unusual wintering locality (JRPC).

Jynx torquilla **Eurasian Wryneck S(B):** 1 Windsor Country Club, Kiambu district 3 Dec (JRPC).

Cercotrichas galactotes **Rufous Bush Chat N:** 38 ringed at Ngulia 15–25 Nov (GCB, DJP *et al.*).

Irania gutturalis **Irania M:** 2–3 in song near Athi River and east of Mtito Andei 10 Mar (DJP). D: singles around Archer's Post 9 Nov (DEW). **N:** 412 ringed at Ngulia 13 Nov-22 Dec of which 302 were between 20 and 26 Nov (GCB, DJP *et al.*).

Luscinia luscinia **Sprosser N:** 4399 ringed at Ngulia 15 Nov–22 Dec (GCB, DJP *et al.*).

Luscinia megarhynchos **Nightingale N:** 95 ringed at Ngulia 15 Nov–22 Dec of which 87 were between 15 and 27 Nov (GCB, DJP *et al.*).

Oenanthe oenanthe **Northern Wheatear D:** 1 near Lokichoggio 11 Aug may have oversummered (MACC, DAT).

Phoenicurus phoenicurus **Redstart R:** singles at Buffalo Springs GR 30 Oct,

Mungatsi (Mumias district) 28 Nov, Lake Baringo 29 Nov and 7 Dec, and Mara GR 7 Dec (BWF, DJP, DH, TS).

Acrocephalus arundinaceus **Great Reed Warbler M:** 20 ringed Lake Naivasha 13 Jan–5 Mar (SJT). 1 in song Aruba Dam, Tsavo East NP 22 Feb (DJP). 10 ringed Ngulia 14–21 Dec (GCB, DJP *et al.*).

Acrocephalus griseldis **Basra Reed Warbler R:** wintering at two sites 4–5 km east of Mtito Andei with >3 at one site in song from early Jan–mid Mar (DJP). 1 ringed Lake Naivasha mid Feb (SJT); 62 ringed Ngulia 20 Nov–21 Dec (GCB, DJP *et al.*).

Acrocephalus palustris **Marsh Warbler N:** a small number wintering, moulting and in song Mtito Andei Jan–Mar, and >2 in song Aruba Dam, Tsavo East NP 22 Feb (DJP). 5627 ringed at Ngulia 15 Nov–22 Dec with max of 964 on 24 Nov (GCB, DJP *et al.*).

Acrocephalus schoenobaenus **Sedge Warbler M:** 31 ringed Lake Naivasha Jan–Feb and 43 ringed 2–5 Mar (SJT). 11 ringed Ngulia 22 Nov–22 Dec (GCB, DJP *et al.*).

Acrocephalus scirpaceus **Reed Warbler M:** 4 ringed Lake Naivasha Jan–Feb and 3 more 2–5 Mar (SJT); 8 ringed Ngulia 23 Nov–20 Dec (GCB, DJP *et al.*).

Hippolais icterina **Icterine Warbler R:** 1 E Mara GR 6 Dec (BWF) and 1 NW Mara GR 10 Dec (SR).

Hippolais languida **Upcher's Warbler R:** 43 ringed Ngulia 15 Nov–20 Dec (GCB, DJP *et al.*).

Hippolais olivetorum **Olive-tree Warbler R:** 60 ringed Ngulia 15 Nov–17 Dec of which 58 were between 15 and 25 Nov (GCB, DJP *et al.*).

Locustella fluviatilis **River Warbler R:** recorded wintering at Mtito Andei 6 Jan–25 Mar when 4 caught and ringed, 3 of them in moult (DJP). 483 ringed Ngulia 15 Nov–22 Dec with max of 63 on 17 Dec (GCB, DJP *et al.*). >4 in song Samburu GR 6 Dec (DJP).

Phylloscopus collybita **Chiffchaff RE:** present in the Trans-Mara Forest (QDS 61C) Jan and Feb (LAB), 2 singing Met Station on Mt Kenya 19 Feb (RB); 1 Kakamega Forest 17 Nov (DEW).

Phylloscopus sibilatrix **Wood Warbler S(B):** Ngulia: 2 caught and ringed 26 Nov and 1 on 22 Dec (GCB, DJP *et al.*).

Phylloscopus trochilus **Willow Warbler M:** an albino at Lake Elmenteita 18–28 Oct (MACC).

Sylvia borin **Garden Warbler M:** 84 ringed at Ngulia 15 Nov–22 Dec (GCB, DJP *et al.*).

Sylvia communis **Whitethroat N:** 4612 ringed Ngulia 15 Nov–22 Dec, max 722 on 21 Nov (GCB, DJP *et al.*).

Sylvia nisoria **Barred Warbler R:** 63 ringed Ngulia 15 Nov–22 Dec (GCB, DJP *et al.*).

Ficedula **sp.** a female or immature Kakamega Forest 30 Nov (BWF).

Lanius minor **Lesser Grey Shrike D:** 1 Lake Jipe 6 Feb may have been wintering (DF, DAT); 1 Buffalo Springs GR 29 Oct (BWF), 1 near Alupe (Busia district) 5 Nov (BWF).

Lanius nubicus **Nubian Shrike S(A):** singles from Lake Baringo 2 Nov, 29 Nov and 7 Dec (at least 2 individuals involved) (several observers).

Lanius senator **Woodchat Shrike R:** 2 near Lake Baringo 5 Feb (ND) and 1 E Mara GR 28 and 30 Jan (RNH) and 12 Feb (ND).

Tanzania: Afrotropical records

supplied by A.L. Archer, N.E. and E.M. Baker, M.A.C. Coverdale, D. Moyer, and I. Robertson

Podiceps nigricollis **Black-necked Grebe RN:** >100 Lake Ndutu, Serengeti NP 1 Jan.

Ixobrychus sturmii **Dwarf Bittern R:** 1 Tarangire NP 9 Feb.

Gypaetus barbatus **Lammergeyer R:** 1 near Mt Meru (Arusha NP) 22 Dec.

Accipiter minullus **Little Sparrowhawk R:** singles Mbeya district Aug, Nov, Dec.

Butastur rufipennis **Grasshopper Buzzard R:** 1 S of Mikumi 1 Dec.

Kaupifalco monogrammicus **Lizard Buzzard E:** 1 Lake Manyara NP 19 Feb.

Aviceda cuculoides **Cuckoo Hawk R:** pair seen daily during Aug in Mbeya district.

Macheiramphus alcinus **Bat Hawk R:** 1–2 Mbizi Mts near Sumbawanga 15 Nov.

Turnix sylvatica **Button Quail M:** female Mugumu, N Serengeti 26 Dec.

Sarothrura elegans **Buff-spotted Pygmy Crake R:** 1 calling throughout the night in Lulanda Forest, Mufindi district 3 Nov.

Sarothrura rufa **Red-chested Pygmy Crake R:** heard commonly in reed beds in Sumbawanga district Jul and Nov.

Vanellus senegallus **Wattled Plover MB:** pair and 2 young Grumeti River, Serengeti 25 Dec.

Columba delegorguei **Bronze-naped Pigeon E:** 4 Ngezi Forest, Pemba Is 21 Dec.
First record for Pemba; 1 previous record from Zanzibar in Jan 1934.

Treron australis pembaensis **Pemba Green Pigeon M:** several in Ngezi Forest, Pemba 17–23 Dec.

Poicephalus robustus **Brown-necked Parrot R:** several Mbizi Mts (near Sumbawanga) 14–17 Nov.

Tauraco livingstonii schalowi **Schalow's Turaco E:** 1 in riverine woodland in Western Corridor, Serengeti 25 Dec. First record from northern Tanzania. Considered a distinct species by several authorities; see *Scopus* 14: 86.

Cercococcyx montanus **Barred Long-tailed Cuckoo R:** very common with several calling daily in number of forests in Mufindi district Sep–Dec.

Clamator glandarius **Great Spotted Cuckoo RN:** up to 20 daily in Ndutu area, Serengeti NP 14–18 Feb.

Clamator jacobinus **Black and White Cuckoo R:** 1 Crater Highlands near Ngorongoro 12 Feb, 2–3 Ndutu area (Serengeti NP) 14–18 Feb, 1 Lake Manyara NP 19 Feb, 2 Arusha NP 21 Feb.

Clamator levaillantii **Levaillant's Cuckoo R:** singles near Mkowe (near Tatanda) 22 Nov and near Mbeya 21 Dec.

Cuculus clamosus **Black Cuckoo R:** singles south of Korogwe Jan, Karatu (Crater Highlands) Feb, and near Sumbawanga Nov.

Cuculus gularis **African Cuckoo R:** 4–5 calling Ndutu area, Serengeti NP 14–18 Feb.

Centropus grillii **Black Cuckoo R:** 2 Tarangare NP 10 Feb, >6 Seronera valley, Serengeti NP 13 Feb.

Tyto capensis **Cape Grass Owl R:** singles reported from Sumbawanga district Jul and Nov, Makambako (N of Njombe) 6 Dec, and Mufindi district 20 Dec.

Glaucidium capense **Barred Owlet R:** 1 in *Brachystegia* woodland N of Mikumi 25 Nov.

Otus rutilus pembaensis **Pemba Scops Owl M:** heard nightly at Kunguni, Pemba Is 17–23 Dec.

First records of this Pemba endemic for almost 50 years.

Caprimulgus natalensis **White-tailed Nightjar RB:** female and 2 newly fledged young near Mkowe, Sumbawanga district 9 Oct.

Apus barbatus **Black Swift R:** >6 Ngurdoto Crater, Arusha NP 21 Feb.

Apus horus **Horus Swift RE:** small flock Mikumi NP 18 Mar; 3–4 with other swifts and swallows, base of Mbeya range, Mbeya district Nov–early Dec.

Buccanodon whytii **Whyte's Barbet R:** 3 in fruiting tree, Mbizi Forest Reserve near Sumbawanga 7 Oct.

Jynx ruficollis **Red-throated Wryneck R:** a pair in *Brachystegia* woodland near Mikumi village 25 Nov.

Smithornis capensis **African Broadbill R:** 2–3 in woodland at Lake Duluti near Arusha 19–20 Feb. **B:** several Luhega Forest Reserve, Mufindi district, including pair and nest with 3 eggs, 28–29 Nov.

Hirundo atrocaerulea **Blue Swallow R:** 4 on edge of Ihan'gana Forest Reserve, Mufindi district 28 Nov.

Hirundo daurica **Red-rumped Swallow E:** singles near Chalinze (W of Dar es Salaam) 4 Jan and 22 Dec.

Hirundo griseopyga **Grey-rumped Swallow M:** 2 at 300 m near Ifakara 2 Dec was a low altitude for this species.

Corvus splendens **Indian House Crow E:** 3 at Ruva bridge 31 Mar (70 km W of Dar es Salaam) further extends the range of this species.

Phyllastrephus cerviniventris **Grey-olive Greenbul R:** a few in woodland at Lake Duluti near Arusha 19–20 Feb.

Dryocichloides bocagei **Bocage's Ground Robin S(A):** frequent in ground water forest at Tanda Mbuga, Sumbawanga district 18–23 Nov.

Dryocichloides poliopterus **Iringa Ground Robin R:** 2–3 reported from Luisenga Stream Nature Reserve, Kigogo Forest Reserve and Luhega Forest Reserve, Mufindi district 5–7 Aug, Sep, 2 Nov, and 28–29 Nov.

Swynnertonia swynnertoni **Swynnerton's Robin S(A):** >6 daily in Luhega Forest Reserve, Mufindi district in Sep and on 29 Nov.

Modulatrix orostruthus **Dappled Mountain Robin S(B):** 3–6 birds recorded daily in Luhega Forest Reserve, Mufindi district throughout Sep. N: >10 in a 50-ha area of Luhega Forest Reserve, 29 Nov.

Turdus fischeri **Spotted Ground Thrush R:** 1 Pugu Hills forest near Dar es Salaam with *Neocossyphus rufus* Red-tailed Ant Thrush 15 Dec.

Turdus litsipsirupa **Groundscraper Thrush R:** 3–5 at Tatanda (SW border area) 31 Jul and 10 Aug. **B:** daily in Mbeya district Oct–Nov with egg-laying late Sep–Oct. No birds seen after 25 Nov suggesting post-breeding dispersal away from the area.

Turdus pelios **African Thrush E:** a pair (presumed race *stormsi*) at Tanda Mbuga, Sumbawanga district 18–23 Nov.

Apalis chariessa **White-winged Apalis S(B):** 2–4 daily in mixed species flocks in Luhega Forest Reserve, Mufindi district in Sep.

Cisticola pipiens **Chirping Cisticola E:** several family parties of 3–4 birds in reeds along the Mumba River at Mumba, Sumbawanga district 27 Jul and 2 collected. See *Scopus* 10: 101.

First records for Tanzania and East Africa.

Cisticola aberrans **Rock-loving Cisticola R:** 3 pairs on rocky hillside in *Brachystegia* woodland at Tatanda (SW border area) 30 Jul and a pair in similar habitat in Mbeya district 8 Dec.

Heliolais erythroptera **Red-winged Warbler R:** 1 near Mikumi 25 Nov.

Erannornis albicauda **White-tailed Blue Flycatcher R:** recorded from SW Tanzania at Tatanda (Jul–Aug), Mbeya district (30 Aug), Mbizi Forest Reserve, Sumbawanga (7 Oct).

Motacilla capensis **Cape Wagtail E:** pair near Mwimbi, Sumbawanga district 14 Aug were new for the area.

Macronyx ameliae **Rosy-breasted Longclaw M:** several presumed to be of the race *altanus* near Tatanda 23 Nov.

Zosterops senegalensis vaughani **Pemba White-eye M:** common around edges of Ngezi Forest, Pemba Is 17–23 Dec. Considered to warrant specific status by some authorities.

Passer domesticus **House Sparrow E:** common in Mbalizi (10 km S of Mbeya) throughout the year; 3 Sumbawanga 11 Oct. The first confirmed records for the southwest of the country.

Ortygospiza atricollis **Quailfinch E:** 3 Mikumi NP 31 Mar.

Ortygospiza locustella **Locust Finch S(B):** several flocks in SW border areas, Oct–Nov.

Pytilia afra **Orange-winged Pytilia R:** 2 Mikumi NP 17 Mar, 1 Morogoro 18 Mar.

Ploceus burnieri **Kilombero Weaver M:** several females and non-breeding males near Ifakara 2 Dec.

Serinus reichardi **Stripe-breasted Seed-eater RN:** >20 in *Brachystegia* woodland near Tatanda (SW border area) 30 Jul.

Tanzanian Palaearctic records

supplied by N.E. and E.M. Baker, M.A.C. Coverdale, I. Robertson and T. Stevenson

Aquila pomarina **Lesser Spotted Eagle RN:** >40 roosting on the ground 20 km S of Mbeya 23 Nov.

Hieraaetus pennatus **Booted Eagle R:** singles Ngorongoro 10 Feb, Lake Eyasi 8 Dec, Himo 30 Dec.

Falco amurensis **Eastern Red-footed Falcon R:** 1 Ngorongoro 11 Feb.

Falco eleonorae **Eleonora's Falcon R:** 1 Ngorongoro 10 Feb.

Numenius arquata **Curlew inland:** 1 Lake Manyara 19 Feb.

Calidris temminckii **Temminck's Stint R:** 2 Lake Manyara 31 Oct.

Fourth record for Tanzania.

Sterna albifrons **Little Tern M:** 1 Lake Manyara NP 31 Oct.

First inland record for Tanzania.

Caprimulgus europaeus **Eurasian Nightjar R:** several Mbizi Mts near Sumbawanga 14–17 Nov.

Upupa epops epops **Hoopoe R:** 2 Lake Manyara NP 19 Feb.

Only the second definitive record for Tanzania.

Irania gutturalis **Irania R:** male Serengeti NP 25 Dec.

Luscinia megarhynchos **Nightingale R:** 1 in song Lake Manyara NP 10–20 Feb.

Anthus cervinus **Red-throated Pipit M:** 2 Ngorongoro Crater 11 Feb, several near Ndutu, Serengeti NP 14–18 Feb, >6 Lake Manyara NP 20 Feb.

Lanius collurio **x** ***Lanius isabellinus*** **Red-backed x Red-tailed Shrike (hybrid) M:** male at forest edge near Ngorongoro Crater 10 Feb.

Uganda: Afrotropical records

supplied by J. Arinaitwe, J.S. Ash, M.A.C. Coverdale, R.J. Dowsett, F. Dowsett-Lemaire, C. Dranzoa, T.M. Gullick, and D.E. Pomeroy

Anhinga rufa **African Darter M:** several Kibumba Rice Scheme near Kampala 11 Mar.

Ciconia episcopus **Woolly-necked Stork M:** 2 Kampala 23 Jan, 11 near Kasenyi, QENP, 8 Mar.

Bostrychia rara **Spot-breasted Ibis E:** 2 Kirimia River, Bwamba lowlands 2–3 Mar; see *Scopus* 14: 73.

First record for Uganda and East Africa.

Phoeniconaias minor **Lesser Flamingo N:** *c.* 2600 Lake Munyanyange 9 Oct.

Pteronetta hartlaubii **Hartlaub's Duck E:** 1 flying down the Semliki River, Bwamba lowlands 1 Mar.

First record for Uganda and East Africa.

Buteo auguralis **Red-necked Buzzard R:** 1 Budongo Forest edge 7 Mar.

Hieraaetus africanus **Cassin's Hawk Eagle E:** 1 Budongo Forest 7 Mar.

Himantornis haematopus **Nkulengu Rail S(A):** 3 pairs heard in forest swamps in Bwamba lowlands 2–3 Mar. *Second record for Uganda.*

Sarothrura rufa **Red-chested Pygmy Crake RE:** 1 ringed Bwindi swamp, Impenetrable Forest 14 Feb; 1 heard Kajansi Fish Farm near Kampala 10 Mar. *There are only three previous old records for Uganda.*

Neotis denhami **Denham's Bustard M:** 1 40 km E of Masindi 10 Mar.

Rostratula benghalensis **Painted Snipe R:** >6 Doho Rice Scheme 27 May.

Cercococcyx mechowi **Dusky Long-tailed Cuckoo R:** common at Buhoma, Impenetrable Forest 17–19 Feb; several Kibale Forest 22–26 Feb, Bwamba Forest 1 Mar and Budongo Forest 6–9 Mar.

Cercococcyx olivinus **Olive Long-tailed Cuckoo S(A):** several Kibale Forest 23 Feb.

Chrysococcyx flavigularis **Yellow-throated Green Cuckoo M:** several daily in Bwamba lowlands 27 Feb–5 Mar.

Clamator jacobinus **Black and White Cuckoo R:** 1 Budongo Forest 7 Mar.

Clamator levaillantii **Levaillant's Cuckoo R:** singles Impenetrable Forest 15 and 19 Feb.

Cuculus clamosus **Black Cuckoo R:** several (all presumed to be of the race *gabonensis*) Impenetrable Forest 13–19 Feb, Bwamba lowlands 26 Feb–5 Mar, Budongo Forest 6–9 Mar.

Scotopelia peli **Pel's Fishing Owl RE:** nightly along the Semliki River, Bwamba lowlands 27 Feb–1 Mar, including juvenile(s). Previously only known in Uganda from Murchison Falls NP.

Caprimulgus inornatus **Plain Nightjar R:** 1 freshly killed on road 20 km W of Masindi 8 Mar.

Apus horus **Horus Swift M:** 6 at 2360 m in the Impenetrable Forest 16 Feb.

Alcedo leucogaster **White-breasted Kingfisher R:** 3 in Bwamba lowlands 2–4 Mar.

Halcyon badia **Chocolate-backed Kingfisher M:** common Budongo Forest 7–9 Mar.

Tockus hartlaubii **Black Dwarf Hornbill S(A):** singles Bwamba lowlands 27 Feb–5 Mar.

Tropicranus albocristatus **White-crested Hornbill S(A):** 1 Bwamba lowlands 1 Mar.

First Uganda record for almost 50 years.

Pogoniulus chrysoconus **Yellow-fronted Tinkerbird MB:** a pair feeding young in nest at Kakoge, 80 km N of Kampala 6 Apr.

First breeding record for East Africa.

Prodotiscus insignis **Cassin's Honeyguide E:** singles Kibale and Budongo Forests 25 Feb and 7 Mar.

Pseudocalyptomena graueri **African Green Broadbill S(A):** 2 near Bwindi swamp, Impenetrable Forest 15 Feb.

Hirundo nigrita **White-throated Blue Swallow E:** 2 pairs Semliki River, Bwamba lowlands 28 Feb–1 Mar (see *Scopus* 14: 73).

First record for Uganda and East Africa.

Kakamega poliothorax **Grey-chested Illadopsis M:** 1 ringed Impenetrable Forest 18 Feb and retrapped during Mar.

Phyllastrephus atripennis **Capuchin Babbler M:** fairly common Bwamba lowlands 27 Feb–5 Mar.

Phyllastrephus icterinus **Icterine Greenbul M:** 1 ringed Bwamba lowlands early Mar.

Phyllastrephus xavieri **Xavier's Greenbul M:** common in the Bwamba lowlands 27 Feb–5 Mar.

Cossypha roberti **White-bellied Robin Chat M:** present at 1630 m in the Impenetrable Forest in Feb.

Dryocichloides archeri **Archer's Ground Robin M:** fairly common above 2000 m in the Impenetrable Forest 12–20 Feb.

Turdus tanganjicae **Kivu Ground Thrush S(B):** 1 seen and at least 3 heard at 1630 m in the Impenetrable Forest 18–19 Feb.

Apalis nigriceps **Black-capped Apalis M:** fairly common in Budongo Forest 7–9 Mar.

Bradypterus carpalis **White-winged Warbler M:** common in papyrus swamps at edges of the Kibale Forest Feb–Mar.

Bradypterus graueri **Grauer's Rush Warbler M:** common in Bwindi swamp at 2100 m in the Impenetrable Forest 13–15 Feb.

Eremomela badiceps **Brown-crowned Eremomela M:** common in the Budongo Forest 7–9 Mar.

Hemitesia neumanni **Short-tailed Warbler S(A):** fairly common at 1630 m in the Impenetrable Forest 18–19 Feb.

Macrosphenus concolor **Grey Longbill S(A):** 2 observations in the Budongo Forest 7–9 Mar.

Phylloscopus budongoensis **Uganda Woodland Warbler M:** present at two sites in Budongo Forest 7–9 Mar.

Muscicapa cassini **Cassin's Grey Flycatcher E:** at least 2 pairs on the Semliki River in the Bwamba lowlands 27 Feb–2 Mar.

Batis ituriensis **Ituri Batis E:** 2 pairs Budongo Forest 8 Mar, see *Scopus* 14: 74.
First records for Uganda and East Africa.

Megabyas flammulata **Shrike Flycatcher M:** fairly common at Bwamba, Budongo and Kibale Forests Feb–Mar. N: >10 together in Kibale Forest 23 Feb.

Dryoscopus gambensis **Northern Puffback E:** 1 Budongo Forest 7 Mar was the first record for the area.

Laniarius mufumbiri **Papyrus Gonolek RE:** common in papyrus swamps on the edges of Kibale Forest during Feb.

Malaconotus lagdeni **Lagden's Bush Shrike S(A):** heard frequently in the Impenetrable Forest down to 2100 m 12–20 Feb, suggesting it may be more common than indicated by Britton (1980).

Cinnyricinclus sharpii **Sharpe's Starling R:** several in the Impenetrable Forest 13–14 Feb.

Poeoptera lugubris **Narrow-tailed Starling E:** 2 at Budongo Forest 6 Mar were new for the area.

Nectarinia minulla **Tiny Sunbird M:** 1 Kibale Forest 23 Feb.

Ploceus aurantius **Orange Weaver RE:** fairly common in secondary riverine woodland along the Semliki River, Bwamba lowlands 27 Feb–2 Mar were presumably nominate birds, not previously recorded in East Africa.

Ploceus weynsi **Weyns' Weaver R:** common in savanna near Budongo sawmills 9 Mar.

Plocepasser mahali **White-browed Sparrow Weaver E:** 1 near Busolwe, Tororo district 27 May.

Nesocharis capistrata **Grey-headed Olive-back E:** singles near Biso (W of Masindi) 29 Apr and near Butema (25 km SE of Hoima) 1 May.

Spermophaga poliogenys **Grant's Bluebill M:** fairly common in Bwamba lowlands 2–4 Mar.

Parmoptila woodhousei **Red-fronted Antpecker M:** singles at 1630 m in the Impenetrable Forest 19 Feb, and at Kibale Forest 25 Feb.

Uganda: Palaearctic records

supplied by J.S. Ash, M.A.C. Coverdale, C. Dranzoa, T.M. Gullick, and D.E. Pomeroy

Aquila nipalensis **Steppe Eagle RN:** tens, with passage of >1000 *Buteo buteo* 25 km E of Masindi 10 Mar.

Aquila pomarina **Lesser Spotted Eagle R:** tens with passage of *B. buteo* as above.

Buteo buteo vulpinus **Steppe Buzzard N:** thousands migrating N over Budongo Forest 9 Mar and >1000 25 km E of Masindi 10 Mar.

Milvus migrans **Black Kite N:** >120 migrating N over northern end of Rwenzoris 26 Feb, and hundreds accompanying movement of *B. buteo* over Budongo 9 Mar and east of Masindi 10 Mar; >200 moving NE over Kibale Forest 3 Apr.

Charadrius asiaticus **Caspian Plover N:** *c.* 1700 near Kikorongo, QENP, 9 Mar.

Tringa erythropus **Spotted Redshank R:** 3 Kajansi Fish Farm, Kampala 10 Mar, 1 Kibimba Rice Scheme 11 Mar, 2 Kajansi 8 Apr.

Tringa ochropus **Green Sandpiper M:** 1 on forest stream near Sipi at *c.* 2600 m on Mt Elgon 14 Dec.

Calidris temminckii **Temminck's Stint R:** 3 Kajansi Fish Farm near Kampala 10 Mar.

Limosa limosa **Black-tailed Godwit R:** 2 Kazinga Channel, QENP, 7 Mar, 1 Kibimba Rice Scheme 11 Mar.

Acrocephalus arundinaceus **Great Reed Warbler R:** 1 in savanna near Budongo sawmills 9 Mar.

Acrocephalus scirpaceus **Reed Warbler M:** heard Bwamba lowlands 26 Feb and 1 Mar, also near Budongo sawmills 4 Mar.

Phylloscopus sibilatrix **Wood Warbler S(B):** 1 Budongo Forest edge 7 Mar.

Ficedula albicollis semitorquata **Collared Flycatcher R:** 1 male in savanna near Budongo sawmills 9 Mar.

Lanius minor **Lesser Grey Shrike MD:** 1 Sipi at *c.* 2100 m on western slope of Mt Elgon 16 Dec.

Kenya: Afrotropical back records

Macrodipteryx vexillarius **Pennant-winged Nightjar R:** 3 at The Ark (Aberdare NP) 1 Aug 1989 (DAT).

Lybius melanopterus **Brown-breasted Barbet E:** 1 Malindi town 1 Dec 1987 (DEW).

Indicator meliphilus **Pallid Honeyguide E:** 1 immature Malindi town 1 Dec 1987 (DEW).

Anthreptes longuemarei **Violet-backed Sunbird E:** adult male in hills between Awasi and Kericho 21 Nov 1982 (DEW).

Kenya: Palaearctic back records

Ciconia nigra **Black Stork R:** 2 Nairobi NP 19 Dec 1988 (SJT).

Falco amurensis **Eastern Red-footed Falcon R:** adult male with Lesser Kestrels *Falco naumanni* at Lake Baringo 17 Nov 1987 (DEW).

Falco eleonorae **Eleonora's Falcon R:** 1 Kakamega town 21 Nov 1987 (DEW).

Phalaropus lobatus **Red-necked Phalarope R:** 1 Lake Nakuru NP 18 Nov 1987 (DEW).

Xenus cinereus **Terek Sandpiper inland:** 1 Lake Naivasha 27 Nov 1987 (DEW).

Asio flammeus **Short-eared Owl S(A):** 1 Lake Naivasha 18 Jan 1988 (DJP).
Fifth Kenya record.

Corrections

Scopus 12: 121: the records for ***Anas crecca***—9 Allia Bay 29 Jan and ***Anas penelope***—1 Ileret 25 Jan and 21 Allia Bay 29 Jan were 1989 sightings and should be deleted; they were, however, correctly recorded in the 1989 report (*Scopus* 13: 121).

List of observers for Kenya records

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R. Bishop
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I. Hardy
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KWWG (Kenya Wetlands Working Group)
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N. Redman
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D. Tomlinson
D. A. Turner
S. J. Tyler
R. Wild
N. Wilson
D. E. Wolf
P. Wootton

East African Rare Birds Committee

During 1990 various members of the committee were asked to adjudicate and give recommendations concerning a number of records for the years 1989 and 1990. The following were accepted:

Diomedea cauta **Shy Albatross** singles off Shimoni, Kenya Aug–Sep 1989 and Sep 1990. Photographic evidence found acceptable.

Pachyptila desolata **Antarctic Prion** 1 off Shimoni, Kenya 27 Sep 1990. Photographic evidence found acceptable.

Procellaria aequinoctialis **White-chinned Petrel** 1 off Shimoni, Kenya 15 Sep 1990. Photographic evidence found acceptable.

Bostrychia rara **Spot-breasted Ibis** 2 Bwamba lowlands, Uganda 2–3 Mar 1990. Sonographic analysis of tape recordings found acceptable.

Pteronetta hartlaubi **Hartlaub's Duck** 1 Semliki River, Bwamba lowlands, Uganda 1 Mar 1990.

Accipiter brevipes **Levant Sparrowhawk** a juvenile at Ngulia, Kenya 3 Dec 1988. An immature or female at Ngulia 24 Nov–9 Dec 1989.

Charadrius alexandrinus **Kentish Plover** 1 Lake Kikorongo, Uganda 31 Dec 1989.

Asio flammeus **Short-eared Owl** 1 Lake Naivasha, Kenya 18 Jan 1988.

Hirundo nigrita **White-throated Blue Swallow** 2 pairs Bwamba lowlands, Uganda 28 Feb–1 Mar 1990.

Phedina borbonica **Mascarene Martin** 2 north of Malindi, Kenya 24 Aug 1989.

Ortygospiza locustella **Locust Finch** flock of 25 near Alupe, Busia district, Kenya 31 Aug 1990.

Pyrenestes ostrinus **Black-bellied Seed-cracker** 2 Mungatsi, Mumias district, Kenya 22 Sep 1990.

The following records were not accepted:

Dryotriorchis spectabilis **Congo Serpent Eagle** 1 Bwamba Forest, Uganda 4–5 Mar 1990.

Pluvialis fulva **Lesser Golden Plover** 1 Lake George, Uganda 12–14 Sep 1989.

Calidris canutus **Knot** 10+ Aruba Dam, Tsavo East National Park, Kenya 27 Aug 1990.

Phalaropus fulicarius **Grey Phalarope** 1 Lake Munyanyange, Uganda 15 Jan 1989.

Sterna paradisea **Arctic Tern** 2 Lake Baringo, Kenya 7 Jul 1989.

First and last dates of some Palaearctic migrants in Kenya

species	last recorded	first recorded
Merops apiaster	21 Mar Nairobi	30 Aug Baringo
Coracias garrulus	20 Mar Mara GR	26 Oct Watamu
Delichon urbica	21 Mar Nairobi	19 Sep Bogoria
Riparia riparia	20 Mar Mara GR	6 Sep Baringo
Oriolus oriolus	14 Mar Baringo	9 Oct Buffalo Springs
Cercotrichas galactotes	—	15 Nov Ngulia
Irania gutturalis	10 Mar Athi River	9 Nov Archer's Post
Luscinia luscinia	—	15 Nov Ngulia
L. megarhynchos	—	15 Nov Ngulia
Monticola saxatilis	20 Mar Mara GR	12 Oct Turkana
Oenanthe oenanthe	"possibly oversummering Lockichoggio, Turkana"	
O. isabellina	12 Mar Baringo	16 Oct Bogoria
O. pleschanka	12 Mar Samburu	12 Oct Turkana
Saxicola rubetra	15 Mar Kapsabet	10 Sep Mungatsi
Acrocephalus arundinaceus	5 Mar Naivasha	14 Dec Ngulia
A. griseldis	—	20 Nov Ngulia
A. palustris	—	15 Nov Ngulia
A. schoenobaenus	21 Mar Nairobi	22 Oct Naivasha
A. scirpaceus	—	22 Oct Naivasha
Hippolais languida	—	15 Nov Ngulia
H. olivetorum	—	15 Nov Ngulia
H. pallida	12 Mar Samburu	15 Nov Ngulia
Locustella fluviatilis	25 Mar Mtito Andei	15 Nov Ngulia
Phylloscopus trochilus	28 Apr Nairobi	24 Sep Langata, Nairobi
Sylvia atricapilla	10 Mar Naro Moru	12 Oct Turkana
S. borin	—	16 Oct Bogoria
S. communis	18 Apr Nairobi	22 Oct Naivasha
S. nisoria	—	15 Nov Ngulia
Muscicapa striata	11 Apr Nairobi	12 Oct Turkana
Anthus cervinus	20 Mar Mara GR	4 Nov Mara GR
A. trivialis	—	12 Oct Turkana
Motacilla flava	20 Mar Mara GR	12 Oct Turkana
M. cinerea	—	19 Sep Kakamega
Lanius collurio	11 Apr Nairobi	4 Nov Mara GR
L. isabellinus	12 Mar Samburu	15 Nov Ngulia
L. minor	11 Apr Nairobi	29 Oct Buffalo Springs

Ringing and migration at Ngulia, Tsavo, autumn 1990

G. C. Backhurst and D. J. Pearson

This, the 19th season of thorough coverage at Ngulia, resulted in the highest catch of birds in a year so far: 17 007 Palaearctic migrants and 252 Afrotropical birds were ringed. Recoveries and controls from the season's activities stand at five at the time of going to press (July 1992).

Ngulia Safari Lodge was manned on 26 nights during the two 'small moon' late autumn periods, from 14 to 28 November and from 11 to 23 December. Only six nights, three in each period, were clear. Otherwise, apart from 15 December when cloud failed

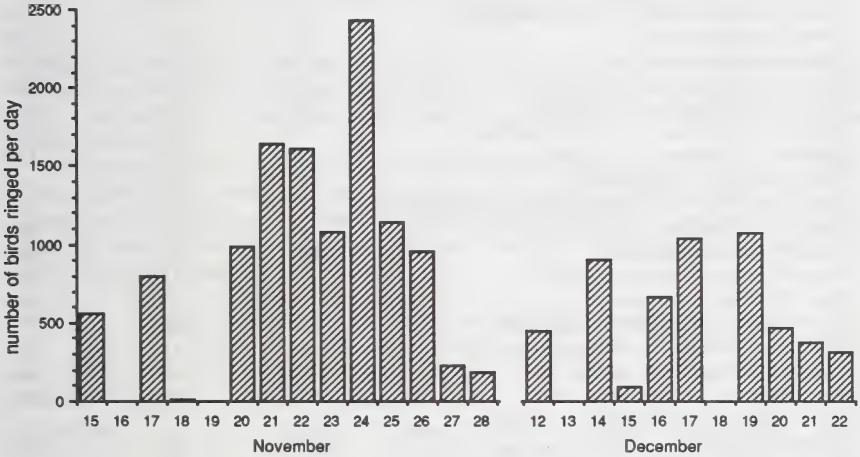

Figure 1. *Showing the number of Palaearctic migrants ringed each day at Ngulia, autumn 1990*

to descend, the remaining nights were all misty, and most produced large catches of migrants (Fig. 1). Weather conditions were particularly ideal during November when just a few light showers occurred on most nights. In December, however, showers were often heavy, and netting was more often curtailed. Falls were never really exceptional by Ngulia standards, though on eight November mornings and five in December, numbers grounded within a few hundred metres of the Lodge ran to several thousands.

Twenty-five people from four countries took part in operations, and the presence of many experienced ringers allowed us to set three 18-m mist-nets almost every night, and to run two ringing 'stations' at busy times. Moreover, nets in the bush could be opened promptly at dawn while processing of the night catch continued at full pace. The highest number of migrants ever ringed at Ngulia in a 24-h period was 2432 on 24 November, considerably higher than the previous best of 1868 set on 28 November 1989 (Backhurst & Pearson 1991). Catches in the bush accounted for some 25 per cent

Table 1. *Numbers of Palaearctic night migrants ringed at Ngulia Safari Lodge from December 1969 to December 1990 (between October and February each season)*

Species	1990/91 total	%†	Total 1969–Dec 1990
Corncrake *Crex crex*	1	—	9
Black and White Cuckoo *Clamator jacobinus*	41	408	223
Asian Lesser Cuckoo *Cuculus poliocephalus*	2	—	4
Scops Owl *Otus scops*	1	—	6
Eurasian Nightjar *Caprimulgus europaeus*	67	459	330
Eurasian Roller *Coracias garrulus*	13	459	66
Eurasian Swallow *Hirundo rustica*	29	358	175
Golden Oriole *Oriolus oriolus*	1	106	19
Rufous Bush Chat *Cercotrichas galactotes*	38	78	926
Irania *Irania gutturalis*	412	438	2116
Sprosser *Luscinia luscinia*	4399	395	24534
Nightingale *L. megarhynchos*	95	284	698
Rock Thrush *Monticola saxatilis*	33	396	183
Isabelline Wheatear *Oenanthe isabellina*	19	380	109
Northern Wheatear *O. oenanthe*	24	335	153
Pied Wheatear *O. pleschanka*	11	374	64
Great Reed Warbler *Acrocephalus arundinaceus*	10	486	47
Basra Reed Warbler *A. griseldis*	62	141	855
Marsh Warbler *A. palustris*	5627	288	40966
Sedge Warbler *A. schoenobaenus*	11	230	97
Reed Warbler *A. scirpaceus*	8	203	80
Upcher's Warbler *Hippolais languida*	43	234	377
Olive-tree Warbler *H. olivetorum*	60	327	393
Olivaceous Warbler *H. pallida*	60	226	469
River Warbler *Locustella fluviatilis*	483	269	3735
Wood Warbler *Phylloscopus sibilatrix*	3	—	7
Willow Warbler *P. trochilus*	237	263	1863
Blackcap *Sylvia atricapilla*	4	120	64
Garden Warbler *S. borin*	84	255	681
Whitethroat *S. communis*	4612	296	32804
Barred Warbler *S. nisoria*	63	181	696
Spotted Flycatcher *Muscicapa striata*	206	502	946
Tree Pipit *Anthus trivialis*	2	133	29
Red-backed Shrike *Lanius collurio*	114	228	1016
Red-tailed Shrike *L. isabellinus*	131	312	894
Hybrid *L. collurio* x *L. isabellinus*	1	—	12
Number of species	35		32
Total ringed	17007		115423

†The autumn 1990 total expressed as a percentage of the mean of the 18 years 1972–1973 to 1989–1990 for each species.

Footnote overleaf

Footnote to Table 1

Totals of Palaearctic species ringed in previous autumn seasons but not in autumn 1990 are as follows:

Little Bittern *Ixobrychus m. minutus* 4, Night Heron *Nycticorax nycticorax* 1, Eleonora's Falcon *Falco eleonorae* 1, Spotted Crake *Porzana porzana* 1, Great Snipe *Gallinago media* 1, Eurasian Cuckoo *Cuculus canorus* 2, Sand Martin *Riparia riparia* 6, Redstart *Phoenicurus phoenicurus* 3, Whinchat *Saxicola rubetra* 3, Savi's Warbler *Locustella luscinioides* 2, Chiffchaff *Phylloscopus collybita* 1, Red-throated Pipit *Anthus cervinus* 1, Yellow Wagtail *Motacilla flava* 3.

From December 1969 a total of 115 676 Palaearctic night-migrating birds of 48 species (plus one hybrid) has been ringed at Ngulia during southward passage between October and February inclusive.

of the birds ringed in November and almost 35 per cent in December. One hundred and eighty metres of mist-net were normally used in twelve sites. The highest bush catch, 574, was made on 17 December, after a night with very heavy showers which persisted until after dawn.

The Marsh Warbler[1] regained its usual position as the most-ringed species (cf. 1989–90), followed by Whitethroat and Sprosser, and with River Warbler (483 ringed), as usual, in fourth position. In view of the high overall total ringed, it was not surprising that the numbers of all minor species (apart from the Rufous Bush Chat) were well above average (Table 1).

Table 2. *Recoveries and controls reported by July 1992 from the 1990 autumn Ngulia ringing*

Marsh Warbler *Acrocephalus palustris*			
Radolfzell	1	20.06.89	Schmellnricht, **Germany**, 49°08N, 11°20E
BX27952	v	16.12.90	Ngulia, 3°00S, 38°13E. Elapsed time 213 d, great circle distance 6305 km
Bruxelles	3	30.07.90	Floriffoux, **Belgium**, 50°27N, 4°46E
3-651199	v	26.11.90	Ngulia, 119 d, 6720 km
Stockholm	3	26.08.90	Sotemosse, Skåne, **Sweden**, 55°26N, 13°25E
AZ66200	v	01.09.90	Sotemosse
	v	25.11.90	Ngulia, 91 d and 85 d, 6865 km
Stockholm	3	26.11.90	Ngulia
BA56927	X (*cat*)	*c.*15.05.91	Ras Tanura, **Saudi Arabia**, 26°41N, 50°11E, *c.* 170 d, 3525 km.
Whitethroat *Sylvia communis*			
Stockholm	3	22.11.90	Ngulia
BA53268	X (*car*)	23.06.91	Neftegorsk district, near Kuybyshev, **Russia**, 52°40N, 51°13E., 213 d, 6305 km.

[1]Scientific names are given in Tables 1 and 3

Recoveries and controls from the season's work reported so far are given in Table 2. There were also two retraps of Palaearctic birds ringed at Ngulia in previous seasons: an Olivaceous Warbler ringed on 26 November 1989 and retrapped on 20 November 1990, and a Garden Warbler ringed on 5 January 1990, retrapped 16 December 1990.

Stockholm Museum rings were used this season on all Palaearctics ringed at Ngulia. The purpose of this experiment was to see if recovery rates increased compared with those obtained using our normal 'Inform Museum Nairobi' rings. We have found that some recoveries, with the *ring* number written on the envelope, are mis-sorted to the post office box number of the ring number. We know that this has happened at least twice because the 'ring number box renter' has forwarded the recovery. What we do *not* know is how many recoveries have been misdirected in this way. The use of Stockholm-addressed rings is an attempt to test whether we have been losing a significant number of recoveries. However, there are other factors controlling whether recoveries are a) ever reported in the first place and b) if they are, whether they reach the relevant ringing authority. For instance, a killer of small birds in the Middle East may be more inclined to report a ring from an exotic place such as Nairobi than from a European address to which he or his friends have written many times.

Afrotropical species

Very few Afrotropical birds are associated with the massive southerly movement of Palaearctic species at Ngulia. The most numerous are the Harlequin Quail and various nightjars. Other species, including known Afrotropical migrants, have occurred over the years only in minute numbers, suggesting that their main migrations are at different times of year, that they take place mainly away from Ngulia or that they occur by day. It is also conceivable, though unlikely, that some Afrotropical species pass over Ngulia at night during the autumn but are not attracted down to an appreciable extent.

The immature Ashy Flycatcher caught during morning netting in the bush on 24 November was the first record for the area and the two Pygmy Kingfishers (nominate race), also caught in the bush on 23 and 24 November were new too. The Red-capped Robin Chat caught at night on 15 November was only the second record (the previous example had also been caught at night) and the Singing Bush Lark, caught at night on 20 November was the first example since 1983. The usual owl seen at Ngulia is Verreaux's Eagle Owl *Bubo lacteus*, but it has never been ringed; Barn Owls are seldom seen but one was caught twice (and ringed) on 22 December this year. A list of Afrotropical birds caught during this season is given in Table 3.

Table 3. *Afrotropical species ringed at Ngulia during the 1990 autumn. At least some examples of birds printed in* ***bold type*** *have been caught at night*

Species/totals:	1990/91	1969–91
Dwarf Bittern *Ixobrychus sturmii*	**1**	**3**
Harlequin Quail *Coturnix delegorguei*	**51**	**1131**
Namaqua Dove *Oena capensis*	**1**	**12**
Laughing Dove *Streptopelia senegalensis*	**10**	**69**
Didric Cuckoo *Chrysococcyx caprius*	**1**	**159**
White-browed Coucal *Centropus superciliosus*	**1**	**6**
Barn Owl *Tyto alba*	**1**	**1**

Species/totals:	1990/91	1969–91
Slender-tailed Nightjar *Caprimulgus clarus*	**4**	**58**
Donaldson-Smith's Nightjar *C. donaldsoni*	**9**	**159**
Dusky Nightjar *C. fraenatus*	**10**	**50**
Plain Nightjar *C. inornatus*	**31**	**162**
Grey-headed Kingfisher *Halcyon leucocephala*	**7**	**26**
Pygmy Kingfisher *Ispidina p. picta*	2	2
Red-fronted Tinkerbird *Pogoniulus pusillus*	1	2
Red and Yellow Barbet *Trachyphonus erythrocephalus*	1	18
Black-throated Honeyguide *Indicator indicator*	2	6
Lesser Honeyguide *I. minor*	3	21
Cardinal Woodpecker *Denropicos fuscescens*	1	3
Singing Bush Lark *Mirafra cantillans*	**1**	**9**
Rufous Chatterer *Turdoides rubiginosus*	1	20
Black Cuckoo Shrike *Campephaga flava*	**4**	**15**
Zanzibar Sombre Greenbul *Andropadus importunus*	3	12
Common Bulbul *Pycnonotus barbatus*	19	57
White-browed Scrub Robin *Cercotrichas leucophrys*	1	24
Red-capped Robin Chat *Cossypha natalensis*	**1**	**2**
Grey-backed Camaroptera *Camaroptera brachyura*	6	37
Grey Wren Warbler *C. simplex*	1	27
Rattling Cisticola *Cisticola chiniana*	1	36
Winding Cisticola *C. galactotes*	1	3
Tawny-flanked Prinia *Prinia subflava*	1	14
Ashy Flycatcher *Muscicapa caerulescens*	1	1
Gambaga Flycatcher *M. gambagae*	**1**	**4**
Paradise Flycatcher *Terpsiphone viridis*	**2**	**13**
Black-backed Puffback *Dryoscopus cubla*	2	9
Slate-coloured Boubou *Laniarius funebris*	3	15
Grey-headed Bush Shrike *Malaconotus blanchoti*	2	3
Three-streaked Bush Shrike *Tchagra jamesi*	2	15
Black-headed Tchagra *T. senegala*	2	15
Wattled Starling *Creatophora cinerea*	**3**	**26**
Superb Starling *Spreo superbus*	1	4
Collared Sunbird *Anthreptes collaris*	3	7
Amethyst Sunbird *Nectarinia amethystina*	1	19
Variable Sunbird *N. venusta*	3	14
Abyssinian White-eye *Zosterops abyssinica*	11	34
White-winged Widowbird *Euplectes albonotatus*	2	12
Masked Weaver *Ploceus intermedius*	1	16
Chestnut Weaver *P. rubiginosus*	3	72
Red-billed Quelea *Quelea quelea*	1	34
Crimson-rumped Waxbill *Estrilda rhodopyga*	1	10
Jameson's Firefinch *Lagonosticta rhodopareia*	5	34
Green-winged Pytilia *Pytilia melba*	8	90
Red-cheeked Cordon-bleu *Uraeginthus bengalus*	8	59
Purple Grenadier *U. ianthinogaster*	6	7
Somali Golden-breasted Bunting *Emberiza poliopleura*	**2**	**23**
Yellow-rumped Seed-eater *Serinus atrogularis*	1	6
Total	252	2686

In addition, 517 individuals of a further 80 Afrotropical species have been ringed in previous autumn seasons at Ngulia, making a total, when added to those listed above of 3203 individuals of 137 species.

Acknowledgements

Without the co-operation of the Kenya Wildlife Service, there would be no ringing at Ngulia. We are most grateful, therefore, to the Warden of Tsavo National Park (West), Dr Richard Leakey and Mr Joe Kioko, all of the KWS. We also thank the management and staff of the Lodge and African Tours and Hotels Ltd for assistance with accommodation. Finally we would like to thank Bengt-Olov Stolt and the Swedish Bird Ringing Centre for agreeing to our using Stockholm Museum rings.

Members of the Ngulia Ringing Group, in addition to the authors, were Simon Aspinall, Daphne Backhurst, Staffan Bensch, David Butterfield, Allan Cawsey, Miles Coverdale, Derek Crawley, Brian Finch, Anna Forbes-Watson, Dennis Hasselquist, Anders Hedenström, Jerry Lewis, Yacob Langer, Åke Lindström, Kobi Merom, Steven Rodwell, Avi Roschman, Mary and Keith Sinclair, Åsa Strömberg, Tove Tomasson, Don Turner, and Susanne Åkesson.

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G. C. Backhurst, Box 24702, Nairobi and *Dr D. J. Pearson, Browses, Sibton, Saxmundham, Suffolk IP17 2JH, England*

Scopus 14: 159–164, July 1992

Ornithological Projects in East Africa 1985–1990

(NB: all the original papers for the *Bird Atlas of Kenya*, including the draft maps and correspondence, are stored in archives of the National Museums of Kenya in Nairobi. Researchers with *bona fide* interests are welcome to consult them and should contact the museum's Department of Ornithology there in order to make arrangements.)

Abe, Miss Eve Department of Zoology, Makerere University, Box 7062 Kampala, Uganda. A study of the effects of fire on grassland birds in Queen Elizabeth National Park, Uganda (1987).

Andersson, Dr Malte Department of Zoology, University of Göteborg, Box 25059, S-400 31 Göteborg, Sweden. Mating systems and sexual selection in widowbirds *Euplectes* species at Kinangop and Laikipia, Kenya.

Andersson, Mr Staffan Department of Zoology, University of Göteborg, Box 25059, S-400 31 Göteborg, Sweden. Behavioural ecology of Jackson's Widowbird *Euplectes jacksoni* in Kenya.

Arinaitwe, Mr Julius Department of Zoology, Makerere University, Box 10066 Kampala, Uganda. a) Effects of swamp drainage on wetland bird populations in eastern Uganda (1990–1991). b) Co-ordinator of I.W.R.B. waterfowl counts for Uganda (1989–present).

Ash, Dr John S. Godshill Wood, Fordingbridge, Hants SP6 2LR, U.K. a) General work on East African birds, especially their distribution (pre-1985–present) and b) see Johns, A. (b)

Backhurst, Graeme C. Box 24702, Nairobi, Kenya. a) Eastern African Ringing Scheme. b) see Pearson, D.J. (b).

Baker, Mrs Elizabeth M. Box 23404 Dar es Salaam, Tanzania. (see also Beakbane, A.J.).

Baker, Neil E. Box 23404 Dar es Salaam, Tanzania. a) Atlas of the Birds of Tanzania. b) Birds of the Pugu Hills Reserve, Tanzania, a breeding and moult study.

Beakbane, Mrs A. J. BBK Ltd, Box 42011 Nairobi, Kenya. a) Plumage variations in a male population of the Eastern Double-collared Sunbird *Nectarinia mediocris* in Tanzania (1982–present). b) with Baker, E.M., Study of habits of Afrotropical nocturnal migrants at Mufindi, Tanzania (1982–86). c) with E.M. Baker. A study leading to the preparation of an annotated checklist of the birds of Mufindi District, southwest Uzungwa Mountains, Tanzania (1981–present). d) A study of forest and garden birds trapped and ringed in Mufundi, Tanzania (1982–86). e) An avifauna study of the Masaku Riverine Forest, Kericho District, Kenya (1990–present).

Beekman, Drs Jan H. Zoologisch Laboratorium, University of Groningen, Box 14, 9750 AA Haren, The Netherlands, with Drs H. P. van der Jeugd. Brood-sizes of Pink-backed Pelican *Pelecanus rufescens*, Yellow-billed Stork *Mycteria ibis* and Grey-headed Gull *Larus cirrocephalus* in Lake Manyara, Tanzania.

Bennun, Dr Leon A. Department of Ornithology, National Museums of Kenya, Box 40658, Nairobi, Kenya. a) Communal breeding in Grey-capped Social Weavers *Pseudonigrita arnaudi* in Kadjiado, Kenya (1984–1989). b) Population and site-fidelity of migratory Spotted Ground Thrushes *Turdus fischeri fischeri* at Gede, coastal Kenya (1985). c) E.A.N.H.S. Nest Record Scheme (1989–present). d) Survey of the avifauna of the Trans–Mara Forest, Kenya (1990).

Breitwisch, Dr Randall J. Department of Biology, University of Dayton, 300 College Park, Dayton, OH 45469-2320, U.S.A. Communication between oxpeckers (Buphagidae) and large mammals in the Maasai Mara National Reserve, Kenya.

Bruggers, Dr Richard L. Chief, International Programs Research Section, United States Department of Agriculture, Animal and Plant Health Inspection Service, Science and Technology, Denver Wildlife Research Center, Building 16, Box 25266, Denver Federal Center, Denver, CO 80225-0266, U.S.A. see Jaeger, M.

Burgess, Dr Neil D. The Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire SG19 2DL, U.K. with Huxham, M.R., Mlingwa, C.O.F. and Davies, S.G. Check-lists and conservation appraisal of coastal forest bird assemblages in selected Tanzanian coastal forests.

Candy, Mrs Mhorag S. Kaimosi Tea Estate, Box 1 Kaimosi, Kenya. a) Habits and breeding biology of the Great Blue Turaco *Corythaeola cristata* (published 1984). b) Habits and breeding biology Ross's Turaco *Musophaga rossae* (pre 1984–1985).

Coverdale, Mr Miles A. C. see Johns, A. (b), Pearson D.J. (c).

Davies, Mr Stan G. The Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire SG19 2DL, U.K. see Burgess, N.D.

Dewhurst, Dr Charles F. Box 30023 Nairobi, Kenya. a) The breeding ecology of Ayres' Hawk Eagle *Hieraaeatus ayresii* in Karen, Nairobi. b) Observations on the nesting habits and food of the Cuckoo Falcon *Aviceda cuculoides* in Kenya.

Dinesen, Mr Lars Zoologisk Museum, Universitetsparken 15, DK-2100 Copenhagen Ø, Denmark. with Lehmberg, T.; Hansen, L.; and Svendsen, J.O. see Hansen, L.

Dinkelloo, Ms Hanni Zoology Department, Colorado State University, Fort Collins, CO 90524, U.S.A. Behavioural ecology of two sympatric babbler *Turdoides* species.

Dittami, Dr John Institut für Zoologie, Althaustraße 14, A-1090 Wien, Austria. with Gwinner, E. The control of annual cycles in Kenyan birds.

Dowsett, Mr R. J. see Johns, A. (b)

Dowsett-Lemaire, Dr Françoise see Johns, A. (b)

Dranzoa, Miss Christine Department of Zoology, Makerere University, Box 10066 Kampala, Uganda. a) Effects of fragmentation on forest birds in Uganda. b) Forest bird populations in Uganda.

Elliott, Dr Clive C.H. Via Castel di Leva 268, Presso Santarelli, 00134 Rome, Italy. Extensive work on quelea and other weaverbirds (Ploceidae) now completed and published as six chapters (Pest Status of the Quelea; Monitoring the Quelea; Distribution, Populations and Migration Patterns of Quelea in eastern Africa; Lethal Control of Quelea; Quelea Control Strategies in Practice; Quelea as a Resource; Conclusions and Future Perspectives) *in*: Bruggers, R.L. and Elliott, C.C.H. (eds). see Bruggers, R.L.

Emlen, Dr Stephen T. Section of Neurobiology and Behavior, Cornell University, Ithaca, NY 14853, U.S.A. with Wrege, P.H. A study of helping behaviour in the White-fronted Bee-eater *Merops bullockoides* at Lake Nakuru National Park, Kenya (1977–1986).

Evans, Mr Matthew R. Department of Zoology, University of Cambridge, Downing Street, Cambridge CB2 3EJ, U.K. The role of plumage signals in mate choice and male-male competition in the Scarlet-tufted Malachite Sunbird *Nectarinia johnstoni* (1989–present).

Fanshawe, Mr John H. International Council for Bird Preservation, 32 Cambridge Road, Girton, Cambridge CB3 OPJ, U.K. Current: Department of Ornithology, National Museums of Kenya, Box 40658 Nairobi, Kenya. a) Birds of Diani Forest (1989). b) Ecology of insectivorous birds in Arabuko-Sokoke forest, Kenya (1989–present). c) Behaviour and ecology of mixed species foraging flocks (1989–present).

Fjeldså, Dr Jon Zoologisk Museum, Universitetsparken 15, DK-2100 Copenhagen Ø, Denmark. a) A long term programme, together with student teams, to map bird distributions throughout Tanzanian montane forests, with the purpose of analysing and interpreting

speciation patterns to understand better the evolution of bird diversity in the area. Detailed biogeographic analysis (including DNA projects by students) should primarily be on chats, babblers and bulbuls. In c-ooperation with entomologists, botanists and molecular biologists to examine whether congruent patterns have common historical explanations. b) Preparation of an annotated complete inventory of the Th. Andersen collections from Tanzania. c) Ornithological surveys in the Livingstone, Selelu, and Rubeho Mountains (these projects are being conducted jointly with other members of staff at the Zoologisk Museum; some will have started in 1990, but they are mostly planned to run from 1991–2000).

Gichuki, Mr Nathan N. Department of Ornithology, National Museums of Kenya, Box 40658 Nairobi, Kenya. all with Gichuki, Mrs C. a) Effect of bush clearance on the Emerald-spotted Wood Dove *Turtur chalcospilos* at Kibwezi, Kenya (1986). b) Annual cycle of the African Citril *Serinus citrinelloides* in Nakuru, Kenya (1988). c) Time budgets of male Speke's Weavers *Ploceus spekei* in Kenya (1988). d) Crowned Crane *Balearica regulorum* as an indicator of habitat condition in wetlands in Kenya (1986–present). e) Reproductive and foraging behaviour of the Crowned Crane *Balearica regulorum* in the Kitale area, western Kenya. f) The longevity and survival of certain passerines in North Nandi Forest (1988).

Gichuki, Mrs Cecilia M. Department of Ornithology, National Museums of Kenya, Box 40658 Nairobi, Kenya. see Gichuki, N.

Gnoske, Dr Thomas Field Museum of Natural History, Roosevelt Road, Chicago, IL 60605-2496, U.S.A. see Willard, D.

Gullick, Mr Tom see Johns, A. (b)

Gwinner, Dr E. see Dittami, J.

Hansen, Mr Louis Zoologisk Museum, Universitetsparken 15 , DK-2100 Copenhagen Ø, Denmark, with Lehmberg, T., Dinesen, L. Svendsen, J. O. A survey of the avifauna of interior parts of the Uzungwa Mountains (Nyamerenge, Nyumbusito, Luhembero), including studies of bird distributions along altitudinal and other habitat profiles, of seasonal movements, of the differences between forest fragments of various sizes and states of degradation (comparing primary and secondary forest); and of different structures of mixed species feeding flocks.

Hasselquist, Mr Dennis Department of Ecology, University of Lund, Ecology Building S-223 62 Lund, Sweden. see Pearson. D. (b)

Hedenström, Mr Anders Department of Ecology, University of Lund, Ecology Building S-223 62 Lund, Sweden. see Pearson. D. (b)

Henderson, Dr Ian Department of Zoology, University of Leicester, University Road, Leicester LE1 7RH, U.K. Terrestrial birds at Lake Naivasha and Hell's Gate National Park, Kenya (1987).

Holmes, Ms Jenifer New York Zoological Society, c/o Department of Botany, Makere University, Box 7062 Kampala, Uganda. with Kramer, S., the effect of forestry management practices on avian populations.

Horne, Ms Jennifer F. M. Department of Ornithology, National Museums of Kenya, Box 40658 Nairobi, Kenya. c–h, with Short, L.L. a) Vocalizations and communication in Afrotropical birds (1970–present). b) Vocal communication in Indo–African *Zosterops* and *Coracina* (1970–present. c) Systematics and zoogeography of Afrotropical birds, especially indigenous landbirds (1969–present). d) Behaviour, ecology and systematics of Afrotropical barbets, honeyguides and woodpeckers (1969–present). e) English names of Afrotropical birds (1984–present). f) Preservation of Afrotropical forest avifaunas (1984–present). g) Behaviour and ecology of threatened East African birds (1980–present). h) Birds of the western Laikipia plateau (Ol ari Nyiro) (1983–present).

Huxham, Mr Mark R. Zoology Department, University of Aberdeen, Aberdeen, Scotland, U.K. see Burgess, N D.

Isack, Dr Hussein Adan Department of Ornithology, National Museums of Kenya, Box 40658 Nairobi. The biology of the Black-throated Honeyguide *Indicator indicator* in northern Kenya (1985–present).

Jackson, Ms Wendy Department of Zoology, University of Washington, Seattle, WA 98185, U.S.A. An experimental study of intra-specific brood parasitism in the Northern Masked Weaver *Ploceus taeniopterus* at Lake Baringo in Kenya.

Jaeger, Dr Michael M. United States Department of Agriculture, Animal and Plant Health Inspection Service, Science and Technology, Denver Wildlife Research Center, Building 16, Box 25266, Denver Federal Center, Denver, CO 80225-0266, U.S.A. Populations and movements of quelea in East Africa.

Jeugd, Drs H. P. van der Zoologisch Laboratorium, University of Groningen, Box 14, 9750 AA Haren, The Netherlands. with Dr Herbert Prinz. Changes in the local bird community of Lake Manyara from a historical perspective (covering the years 1950–present) (1985–present). see also Dr Herbert Prinz and Drs Jan Beekman.

Johns, Dr Andrew D. Makerere University Biological Field Station, Box 409 Fort Portal, Uganda. a) Inventory and distribution of birds in the Kibale Forest Reserve, Uganda. with others; 1990–present. b) with Ash, Gullick, Coverdale, Dowsett and Dowsett-Lemaire. A survey of forest birds in the Semlike Forest, Uganda (1990).

Jones, Dr Peter J. Institute of Cell, Animal and Population Biology, Division of Biological Sciences, University of Edinburgh, Zoology Building, West Mains Road, Edinburgh, Scotland EH9 3JT, U.K. Extensive work on Red-billed Quelea now completed and published as four chapters (on Population Dynamics, General Aspects of Quelea Migrations, Factors Determining the Breeding Season and Clutch Size, and Distribution, Populations and Migration Patterns in Southern Africa) *in*: Bruggers, R.L. and Elliott, C.C.H. (eds). see Bruggers, R.L.

Karanja, Dr Warui Department of Zoology, University of Nairobi, Box 30197 Nairobi, Kenya. see Mwangi, Mr E.

Kasoma, Mr Pantaleon Department of Zoology, Makerere University, Box 7062 Kampala, Uganda (and Department of Applied Biology, University of Cambridge, Pembroke Street, Cambridge CB2 3DX, U.K.). The ecology of ciconiiform wading birds in Queen Elizabeth National Park, Uganda (1985–1989).

Kelsey, Dr Martin G. International Council for Bird Preservation, 32 Cambridge Road, Girton, Cambridge CB3 OPJ, U.K. Analysis of data from migratory Marsh Warblers *Acrocephalus palustris* on passage at Ngulia in Tsavo West, Kenya.

Kramer, Mr Steven New York Zoological Society, c/o Department of Botany, Makere University, Box 7062 Kampala, Uganda. see Holmes, J.

Krause, Mr Wesley Box 2125 Arusha, Tanzania. A study of breeding and local movements of highland forest birds in Marang Forest, northern Tanzania (1988–present).

Lehmberg, Mr Thomas Zoologisk Museum, Universitetsparken 15, DK-2100 Copenhagen Ø, Denmark. with Dinesen, L. Hansen, L. and Svendsen, J.O. see Hansen, L.

Leisler, Dr Bernd Max Planck Institut für Verhaltenphysiologie, Vogelwarte Radolfzell und Andechs, D-7760 Radolfzell-Möggingen, Germany. Ecology of wintering wheatears *Oenanthe* spp. at Lake Nakuru National Park, Kenya.

Lewis, Dr Adrian D. 81 Hazelbury Road, Knowle, Bristol BS14 9ES, U.K. a) with Pomeroy, D.E. *A Bird Atlas of Kenya* (published in 1989, with a single updating supplement) (pre-1984–1989). b) Vocalizations of races of the Yellow-breasted Apalis *Apalis flavida* in Kenya (published in 1989 in *Scopus* 12: 83–86).

Lindström, Dr Åke Department of Ecology, University of Lund, Ecology Building S-223 62 Lund, Sweden. see Pearson, D. (b)

Mafabi, Mr Paul Gumonye Uganda National Wetlands Conservation and Management Programme, Ministry of Environmental Protection, Box 9629 Kampala, Uganda. The effect of swamp reclamation on Grey Crowned Cranes *Balearica regulorum* in Uganda.

Mlingwa, Mr Charles O. F. Zoology Department, University of Dar es Salaam, Box 35064 Dar-es-Salaam, Tanzania. a) Comparative ecology of greenbuls and bulbuls Pycnonotidae in coastal Tanzania (1990–present). b) see Burgess, N.D.

Moyer, Mr David C. 119 Foster Hall, Museum of Natural Sciences, Louisiana State University, Baton Rouge, LA 70803-3216, U.S.A. a) Community ecology of Afro-montane forest birds in Eastern Tanzania (1989–present). b) Species composition and biogeographical affinities of forest birds in the postulated southern migration route in western Tanzania (1989–present).

Muhweezi, Mr A. B. Zoology Department, Makerere Unveristy, Box 7062, Kampala, Uganda. The ecology of raptors in the Impenetrable Forest, Uganda.

Mwangi, Mr Evans M. Wildlife Conservation International, Box 62844 Nairobi, Kenya. with Karanja, W. Ecology and behaviour of bustards (Otididae) in Nairobi National Park, Kenya.

Newmark, Dr William D. Department of Biology, University of California–San Diego, 9500 Gillman Drive, La Jolla, CA 92093-0116, U.S.A. Impact of tropical forest fragmentation on bird populations in the Usambara mountains, Tanzania (1987–present).

Obua, Mr James Fruit dispersal by frugivorous birds in the Kibale Forest Reserve Uganda. Makerere University Biological Field Station, Box 409 Fort Portal, Uganda.

Ogwangit, Mr N. A. Ministry of Agriculture, Box 102 Entebbe, Uganda. The prevention of bird damage in rice fields in Uganda.

Pearson, Dr David J. Browses, Sibton, Saxmundham, Suffolk IP17 2JH, U.K. a) Numbers and distribution of Palaearctic ducks and waders in Kenya. Regular counts were made at Naivasha 1986–1988 and, with Coverdale, M.A.C. and Archer, A.L., on the NW and NE shores of Lake Turkana in Jan–Feb 1988–1989. b) with Hasselquist, D., Lindström, Å. and Hendenström, A. Moult and seasonality of landbird migrants wintering in east Kenya bushlands with particular reference to the Barred Warbler, Whitethroat, and Irania. c) with Backhurst, G.C. (and other members of the Ngulia Ringing Group) migration and ringing studies at Ngulia, Tsavo West, Kenya. d) & e) see Turner, Don a) & b).

Pomeroy, Dr Derek E. Makerere University Institute of Environment and Natural Resources, Box 10066 Kampala, Uganda. a) Bird population studies in Lake Mburo, Queen Elizabeth, and Murchison Falls National Parks, and Uganda more generally. b) Bird conservation in Uganda. c) Marabou Stork *Leptoptilos crumeniferus* populations in Uganda. d) see Lewis, A.D. (a).

Prinz, Dr Herbert H. T. Zoologisch Laboratorium, University of Groningen, Box 14, 9750 AA Haren, The Netherlands. with Drs H.P. van der Jeugd. An annotated check-list of the birds of Lake Manyara National Park, Tanzania, covering the years 1950–present (1985–present).

Rabøl, Dr Jørgen Institute of Population Biology, Universitetsparken 15, DK-2100 Copenhagen, Denmark. Detailed study of the community structure and segregation of forest birds; starting at Masumbai and Amani in the Usambaras, but with comparative work elsewhere (Uzungwa to Pare to Kilimanjaro) (this work is due to start in 1992 and run for two years).

Rasa, Frau Prof Dr O. Anne E. Zoologisches Institut, Arbeitsgruppe Ethologie, Kirschallee 1, 5300 Bonn, Germany. a) Mutualism between hornbills *Tockus* spp. and the Dwarf Mongoose *Helogale parvula* in the Taru Desert. b) Migratory patterns and behaviour of small raptors in the Taru area, S.E. Kenya.

Reyer, Prof Dr Heinz-Ulrich Department of Zoology, University of Zürich, Winterthurestraße 190, 8057 Zürich, Switzerland (pre-1985–1987). a) Ecology and social behaviour of kingfishers at Lakes Naivasha, Nakuru, and Victoria. b) with Isack, H.A. Biology of the Greater Honeyguide *Indicator indicator* with emphasis on guiding behaviour. c) with Sonnenschein, E. Biology of bush-shrikes with emphasis on the functions of duetting.

Ryall, Dr Colin SET, Farnborough College, Boundary Road, Farnborough, Hants GU14 6SB, U.K. 1984–1989. a) A study of the Indian House Crow *Corvus splendens* in coastal Kenya, with particular reference to its adverse impacts on native avifauna, and the appraisal and implementation of control techniques. b) A study of the avifauna of Nguuni, near Mombasa, with respect to seasonality, habitat preference, etc. c) A survey of the birds of Wasini Island, Kenya.

Short, Prof Lester L. Department of Birds, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024-5192, U.S.A. see Horne, J.F.M. (c–h).

Smart, Dr Andrew Durrell Institute of Conservation and Ecology, The University, Canterbury, Kent CT2 7NY, U.K. a) Population survey of the African Fish Eagle *Haliaeetus vocifer* at Lake Naivasha, Kenya (1987). b) Foraging of Pied kingfisher *Ceryle rudis* at Lake Naivasha, Kenya (1987). c) with Taylor, Mr C.D. Diet of Verreaux's Eagle Owl *Bubo lacteus* at Tykalba, Lake Naivasha, Kenya (1987). d) with Taylor, Mr C.D. and Muchiri, Mr S.M. Changes in densities of piscivorous birds at Lake Naivasha, Kenya (1987).

Sonnenschein, Ms Edith Max-Planck Institut für Verhaltenphysiologie, D–8130 Seewiesen, Post Starnberg, Germany. see Reyer, H-U (c).

Stevenson, Mr Terry Box 1051 Nakuru, Kenya. Birds of the Lake Baringo area, Kenya.

Svendsen, Mr Jens Otto Zoologisk Museum, Universitetsparken 15 , DK-2100 Copenhagen Ø, Denmark. with Lehmberg, T. Hansen, L. and Dinesen, L. see Hansen, L.

Taylor, Mr C. D. c/o Dr David Harper, Department of Zoology, University of Leicester, University Road, Leicester LE1 7RH, U.K. see Smart, A. c) & d).

Thompson, Mr Jeremy J. University of Queensland, Department of Zoology, St Lucia, Brisbane, 4067, Australia. a) Quelea movement patterns and mass marking with fluorescent particles (in association with the FAO-UNDP regional Quelea Project). b) The introduction of lovebirds *Agapornis* spp to Lake Naivasha and their subsequent effect on the area's agriculture and indigenous birdlife.

Turner, Mr Don A. Box 48019 Nairobi, Kenya. a) with Dale Zimmerman and David Pearson, a *Field Guide to the Birds of Kenya*. b) with David Pearson and the OS-c List Committee, a revision of *Birds of East Africa* (both 1985–present).

Tyler, Dr Stephanie J. Royal Society for the Protection of Birds, Bryn Aderyn, The Bank, Newtown, Powys SY16 2AB, Wales, U.K. a) A study of upland river birds, notably Mountain Wagtails *Motacilla clara*, Grey Wagtails *M. cinerea*, and Black Ducks *Anas sparsa* in Ethiopia and Kenya (pre-1984–present, but sporadic). b) A study of bird communities of papyrus swamp at Lake Naivasha, Kenya (1990).

Wambuguh, Mr O. Department of Zoology, University of Nairobi, Box 30197 Nairobi, Kenya. The breeding biology of Red-billed Hornbills *Tockus erythrorhynchus* in Tsavo East National Park, Kenya.

Willard, Dr David E. Field Museum of Natural History, Roosevelt Road, Chicago, IL 60605-2496, U.S.A. with Gnoske, T. Elevational distributions of birds in the Rwenzori Mountains, Uganda.

Wrege, Dr Peter H. Section of Neurobiology and Behavior, Cornell University, Ithaca, NY 14853, U.S.A. see Emlen, S.T.

Zimmerman, Dr Dale 1011 West Florence Street, Silver City, New Mexico 88061, U.S.A. see Turner, Don a).

Names, addresses and project details are presented above as accurately as the information available allowed. Will people please contact the compiler at the editorial address with additions and corrections for the list. We hope that the resurrection of this feature in the annual report will help both to illustrate the extent of ornithological work under way in East Africa and allow researchers to be in touch with one another more easily.—*John Fanshawe, compiler*

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Dowsett-Lemaire, F. & Dowsett, R. J. Vocal mimicry in the lark *Mirafra hypermetra* as a possible species-isolating mechanism. *Bulletin of the British Ornithologists' Club* 98: 140–144.

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Prigogine, A. Status of the Montane Oriole *Oriolus percivali* and its hybridisation with Black-headed Oriole *O. larvatus* in East Africa. *Le Gerfaut* 68: 253–320.

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compiled by D. A. Turner

Index to scientific names

Index prepared by Don Turner, Anna Forbes-Watson and Graeme Backhurst

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