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OSME

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- To collect, collate, and publish data on all aspects of the birds of the Middle East.
- To promote an interest in ornithology and bird conservation throughout the Middle East.
- To develop productive working relationships with other governmental and non-governmental organisations with an interest in conservation and/or natural history in the region.

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SANDGROUSE

Volume 12 1990

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Editorial I hope subscribers will consider a shorter-than-usual issue to be reasonable exchange for having publication back on a more predictable schedule—in preparation for *Sandgrouse's* move to a twice-yearly appearance, starting in early 1991. Again I have been able to include colour photographs, but it would be impossible to do this regularly without financial assistance—and, as before, this has come from *Subbuteo Natural History Books Ltd* who have now most generously agreed to continue their sponsorship for the foreseeable future.

I am grateful to Hilary Welch for her hard work in producing the new cover design (and to Ian Willis, originator of OSME's sandgrouse logo), as well as to OSME Council for its support of the *Sandgrouse* rejuvenation. For help in many, various, and important ways during the preparation of this and the previous two volumes, and for assistance with material still in the pipeline, I am very happy to give my thanks to Kevin Baker, Chris Bowden, the British Museum (Natural History) at Tring, Andy Clements, Nigel Collar, Peter Colston, Sue Emery, James Ferguson-Lees, Dave Fisher, Paul Goriup, Chris Heard, Dawn Horsman, Max Kasperek, Rod Martins, David Mead, Doug Page, Joyce Parr, David Pearson, Mike Rands, Bill Stuart, J. A. Tallowin, Mick Turton, Effie Warr, and Ruth Wootton.

Duncan Brooks

Effects of the mass migration of desert locusts *Schistocerca gregaria* on birds in the Taif area, Saudi Arabia

PETER SYMENS

Summary During an influx of locusts *Schistocerca gregaria* to south-west Saudi Arabia in autumn 1988, 32 bird species were seen eating them, both dead and (mostly) alive. Several species adopted hunting techniques unusual for them, involving in particular the hunting of flying prey. A new co-operative foraging method of Houbara Bustard *Chlamydotis undulata* is described. Several resident species took the opportunity of temporary food abundance to breed, and other non-resident birds which are normally scarce in the area were present in larger numbers than usual. A few non-resident birds were observed out of their normal habitat as they followed the swarms.

MIGRATORY locusts are known to be an important food source for a wide variety of bird species, and their movements are known to cause big changes in bird populations and behaviour on the African continent (Curry-Lindahl 1981). In the autumn of 1988 large swarms of desert locusts *Schistocerca gregaria* reached Saudi Arabia by crossing the Red Sea from Africa. At the National Wildlife Research Center in Taif (21°17'N 40°40'E) the first locusts were observed on the evening of 16 October, and for about two weeks from then onwards large swarms were observed almost daily, migrating southwards; one such was estimated to be 12-14 km long and 2 km wide. During November and December only a few small swarms of migrating locusts were noticed, but there were many individuals dispersed in and around the fenced area of the Center and daily observations were made on how the birds present reacted to them.

The Center lies at an altitude of 1,400 m on the eastern foothill plateau of the Hijaz mountains. Annual rainfall is approximately 170 mm, and dominant plants in and around the Center are *Acacia ehrenbergiana*, *A. tortilis*, *A. irakensis*, and the shrubs *Lycium shawii*, *Salsola spinescens*, and *Indigofera spinosa*. Within the 600-ha fenced area, plants are recovering from former heavy overgrazing, whereas outside the Center the habitat, which is an open dry savanna with scattered granitic hills, is still severely overgrazed. Locusts were observed feeding mostly on the grass *Panicum turgidum* and on *Salsola spinescens*, *Indigofera spinosa*, and *Boerhavia coccinea*.

RESULTS

32 bird species were seen utilising locusts as a food source (Table 1). This represents about 64 per cent of the 51 species that were regularly observed in the area during the same period.

Consumption of live and dead locusts

29 species preyed on living locusts, including 13 which appeared to take them

Table 1. Foraging methods of birds exploiting locusts *Schistocerca gregaria* in the Taif area (Saudi Arabia), autumn 1988.

	Live locusts		Dead locusts	Remarks
	On ground	In air		
Cattle Egret <i>Bubulcus ibis</i>	●			Out of normal habitat
Grey Heron <i>Ardea cinerea</i>	●			Out of normal habitat
Black Kite <i>Milvus migrans</i>		●		Atypical foraging method
Pallid Harrier <i>Circus macrourus</i>		●		Atypical foraging method
Montagu's Harrier <i>C. pygargus</i>		●		Atypical foraging method
Sparrowhawk <i>Accipiter nisus</i>		●		Insects not usual prey
Steppe Eagle <i>Aquila nipalensis</i>		●		Atypical foraging method
Lesser Kestrel <i>Falco naumanni</i>	●	●		Unusually large number present
Kestrel <i>F. tinnunculus</i>	●			
Barbary Falcon <i>F. pelegrinoides</i>		●		Insects not usual prey
Sand Partridge <i>Ammoperdix heyi</i>	●			
Houbara Bustard <i>Chlamydotis undulata</i> *	●			Atypical foraging method
Gull-billed Tern <i>Gelocheildon nilotica</i>		●		Out of normal habitat
Caspian Tern <i>Sterna caspia</i>		●		Out of normal habitat
Barn Owl <i>Tyto alba</i>	●			Breeding outside normal season
Spotted Eagle Owl <i>Bubo africanus</i>	●			
Little Owl <i>Athene noctua</i>	●			Breeding outside normal season
Little Green Bee-eater <i>Merops orientalis</i>		●		
Hoopoe <i>Upupa epops</i>	●	●		Unusually large number present
Tawny Pipit <i>Anthus campestris</i>			●	
Pied Wagtail <i>Motacilla alba</i>			●	
Grey Hypocolius <i>Hypocolius ampelinus</i>	●			Insects not usual winter prey
Yellow-vented Bulbul <i>Pycnonotus xanthopygos</i>			●	
Isabelline Wheatear <i>Oenanthe isabellina</i>	●		●	
Wheatear <i>O. oenanthe</i>	●		●	
Desert Wheatear <i>O. deserti</i>	●		●	
Blue Rock Thrush <i>Monticola solitarius</i>	●	●	●	Atypical foraging method
Arabian Babbler <i>Turdoides squamiceps</i>	●			Breeding outside normal season
Great Grey Shrike <i>Lanius excubitor</i>	●	●		Breeding outside normal season
Brown-necked Raven <i>Corvus ruficollis</i>	●	●		Atypical foraging method
Fan-tailed Raven <i>C. rhipidurus</i>	●	●		Atypical foraging method
House Sparrow <i>Passer domesticus</i>	●	●	●	Atypical foraging method

* Semi-captive population

exclusively from the ground and nine which were seen hunting locusts only in the air. Seven species were observed taking locusts both on the ground and in the air.

Eight species were recorded consuming dead locusts, but in reality this number might have been higher since in many cases it was not possible to determine whether the locusts that were taken on the ground were dead or alive. Of these eight species only Tawny Pipit*, Pied Wagtail, and Yellow-vented Bulbul were not observed to consume live locusts as well. The other five species, which ate locusts both dead and alive, were also rather small birds, in contrast to the greater size of the species which preyed exclusively on live locusts. This indicates that the factor determining whether locusts were taken alive or dead was the size of the bird species involved and therefore the maximum prey size that could be killed by the bird. There appeared to be an increased consumption of dead locusts when the

* For scientific names of bird species studied, see Table 1.

locusts approached or exceeded the usual maximum prey size of the bird.

During these observations there were always both living and dead locusts available, so the picture presented here might well have been different if only dead locusts were available for the birds.

Effects on breeding behaviour

Several resident bird species used this opportunity of temporary food abundance for breeding. Great Grey Shrikes normally start breeding in the Taif area by the end of January, but in 1988 we observed newly fledged chicks by the end of November. They were fed by the adults almost exclusively on locusts. Similar observations were made for Arabian Babbler which normally breeds in March and April, and newly fledged Barn Owls and Little Owls were observed in December. In past years young Little Owls had only been observed during spring, while there were no previous breeding records for Barn Owl in the Center, despite their constant presence.

Abundance of non-breeding birds

In the period during which locusts were abundant some non-resident birds of this area were observed in much higher numbers than usual. During the two weeks of mass locust migration at Taif, no less than 648 Lesser Kestrels were recorded, compared with only 20 birds for the whole autumn of the previous year. A group of 24 wintered near the Center, the first wintering record for Saudi Arabia. Lesser Kestrel is mentioned in the literature as being only a migrant in small numbers in Saudi Arabia (Jennings 1981; Stagg 1985, 1987). As this species is known to follow swarms of insects, it seems possible that the high numbers that appeared in autumn 1988 had followed the locusts from eastern Africa where Lesser Kestrels are quite numerous during autumn migration.

Hoopoes were also more in evidence than in previous years. They usually leave the area by the beginning of October with just a few birds wintering. In the 1988–9 winter several small groups of up to 12 birds were observed with numbers increasing in the second half of October, the time when the locusts arrived.

In previous years Grey Hypocolius has only occasionally been observed in the area, but when the locusts arrived there was an influx with the first group of up to 20 arriving at the same period as the locusts. However, the biggest flocks of over a hundred birds were seen in January 1989 when the locusts had left, and this, plus the fact that on only one occasion were they observed to take locusts (all other observations involved them eating berries), indicates that this invasion was not related to the influx of locusts—which are considered to be an exceptional food source for this species outside the breeding season (Cramp 1988).

Unusual feeding behaviour

On two occasions a Sparrowhawk was observed to catch a locust in flight and land to eat it on the ground. The normal diet of the Sparrowhawk is almost entirely passerine birds, and insects are considered to be exceptional prey (Cramp and Simmons 1980). The same is said too of the Barbary Falcon, of which there was also one observation of a juvenile male catching and eating a locust in flight in a

similar way to a Hobby *Falco subbuteo* or Lesser Kestrel. Four other species of raptor (Black Kite, Pallid Harrier, Montagu's Harrier, and Steppe Eagle), Brown-necked Raven, and Fan-tailed Raven were also seen to catch locusts in the air with their feet and eat them in flight.

Several passerines, such as Blue Rock Thrush, were seen to use the typical hunting technique of flycatchers (Muscicapidae), making short flights after locusts from a perch.

In an enclosure of about 80 ha at the Center where a group of 11 Houbara Bustards (of the local race *macqueenii*) were being studied under semi-captive conditions, some interesting behaviour was noted. On four separate occasions when many locusts settled in the enclosure, a distinct change in the bustards' foraging behaviour occurred. The birds actively hunted exclusively for locusts, up to seven foraging together in a line spaced fairly regularly 5–15 m apart. They ran long distances while maintaining group formation and spacing, picking up locusts from the ground or chasing those that flew up. Locusts flying off were chased at high speed, the birds running distances of more than 100 m—though if the locust reached more than about 1.5–2 m above the ground the bustard would stop abruptly. Chasing would also stop if the locust suddenly turned left or right, but then an adjacent bustard would take up the chase of the same locust. In several cases a locust was chased by a number of different bustards individually before being caught. If at any time one bird in the group stopped running to scan an area in an alert way, all the other birds in the group immediately stopped running and took up the same alert position. If one of the birds started running again a few moments later, then all the rest of the group started again at once. In this way the birds really seemed to be foraging collectively, evidently enabling individuals to profit more from the locusts by increasing their hunting success. Such behaviour has not been recorded before in Houbaras, though female Great Bustards *Otis tarda* in the Crimea (Buzun and Golovach in press) and Ludwig's Bustards *Neotis ludwigii* in South Africa (Herholdt 1987) have been known to feed in a line while hunting locusts, and Denham's Bustard *N. denhami* and Kori Bustard *Ardeotis kori* will gather in flocks at locust swarms (Urban *et al.* 1986; P. D. Goriup *in litt.*).

Birds out of normal habitat

Due to the locust influx some bird species were observed out of their normal habitat. Both Cattle Egret and Grey Heron are common migrants to the region, but records of these species during previous years have been restricted to wet areas. In October 1988, however, both species were observed in the middle of the arid plain foraging for locusts.

Gull-billed Tern is a common coastal migrant and winters on the Red Sea coast with just a few records of migrants inland, and all observations of Caspian Tern in the region have formerly been on the coast. On 5 December, however, a mixed group of six Gull-billed and three Caspian Terns was recorded hawking flying locusts just outside Taif. This is the area's first inland winter record of either of these species, and the birds had presumably flown inland following the locusts.

Pesticide spraying

This abnormal food abundance presented one great risk for all the birds utilising

it, namely poisoning. For agricultural reasons, the authorities sprayed the locust swarms with pesticides. This was done on a great scale over the Red Sea and in remote areas though not one bird with clear signs of poisoning was observed or found, despite the fact that for most of the species included here, locusts were the major food source for several weeks.

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The Spotted Thick-knee *Burhinus capensis* and Stone Curlew *B. oedicnemus* in Arabia

MICHAEL GALLAGHER and KAREN STANLEY PRICE

Summary The Spotted Thick-knee *Burhinus capensis* appears to be resident in Arabia from south-west Saudi Arabia through Yemen to central Oman, possibly to northern Oman where its status is uncertain. Some causes of confusion with Stone Curlew *B. oedicnemus* are discussed, and reports in the literature of that species nesting in the Arabian peninsula are examined and discounted. The first proved nesting of Spotted Thick-knee in Oman was observed in 1983 and 1984, and the first descriptions of the eggs, nest, and chicks of the Arabian race, *dodsoni*, are given. Proof of earlier nesting in Arabia (southern Yemen) is provided by two specimens of unfledged birds in the British Museum (Natural History).

IN REVIEWING the status of Spotted Thick-knee *Burhinus capensis* in Arabia it is evident that there has been confusion in the past with Stone Curlew *B. oedicnemus*, which was said by Meinertzhagen (1954) to breed in southern Arabia, though there is no evidence for this apart from two equivocal records of nests in 1945 (Bark Jones and Hartley 1957, see below). Spotted Thick-knee, however, is a resident from south-west Saudi Arabia to central Oman, and in the future will probably be found more widely and commonly, as is now happening in Oman and northern Yemen. Both species, particularly Spotted Thick-knee, suffer from under-reporting because of their retiring, crepuscular, and nocturnal behaviour, but calls give notice of the presence of the latter at least.

CONFUSION BETWEEN THE SPECIES

Confusion has occurred between Stone Curlew and Spotted Thick-knee in the literature and among specimens, as well as in the field. The several races of Stone Curlew breed from Europe to central Asia, south to the Canary Islands, North Africa, the Levant, Turkey, Iraq, Iran, and India, and east to Indo-China. The southernmost breeding populations in the Middle East inhabit eastern Egypt down to its southern border and probably into northern Sudan. Northern populations are migratory, but in some southern parts of its breeding range it is resident, though not necessarily sedentary, and movements are inadequately known. (Vaurie 1965; Cramp and Simmons 1983; Urban *et al.* 1986; Hollom *et al.* 1988.)

In the Arabian peninsula, Stone Curlew is presently known only to be an uncommon or irregular bird on passage and in winter (Gallagher and Woodcock 1980; Jennings 1981; Cramp and Simmons 1983; Brooks *et al.* 1987; Hollom *et al.* 1988). Vaurie (1965) included Arabia in the breeding range (of the race *saharae*), presumably misled by Meinertzhagen (1954) who stated 'Widespread resident in Arabia from Muscat to Aden and north to Yemen, Jeddah, Riyadh, northern Arabia and the Syrian desert'. Meinertzhagen (1954) also described the egg of *saharae*, and added 'In the Aden Protectorate [now southern Yemen] fresh eggs have been found

in May'.

Despite Meinertzhagen's assertions, however, there appears never to have been any proof of Stone Curlew breeding in Arabia, though there are examples of apparent confusion. First, is a pullus from 'Fayush, Aden' (Fiyush, 13°00'N 44°58'E, 12 km south-east of Lahej) on 17 July 1922 in the Meinertzhagen collection (BMNH number 1965.M.3759). Although not mentioned in the literature, nor labelled or catalogued by Meinertzhagen, the specimen was found amongst Stone Curlews in his collection, perhaps indicating that he accepted it as a proof of nesting of that species. However, P. R. Colston and F. E. Warr (*in litt.*) noticed that it does not match too well the pulli of Stone Curlews in the BMNH collection. MG and Mrs Warr have re-examined it, and compared it with photographs of known Spotted Thick-knee pulli and with specimens of Stone Curlew pulli, and are confident that it is Spotted Thick-knee.

Second, an entry in Meinertzhagen's diary for 7 March 1948 records Stone Curlew breeding at Hadda, near Jidda. There appears to be no evidence for breeding, unless Meinertzhagen assumed it from the state of the gonads of the female collected there on 10 March 1948 (BMNH number 1965.M.3755), shown to be enlarging in the sketch on its label. There are no specimens of Spotted Thick-knee from Hadda, and the specimen is not mentioned in Meinertzhagen (1949, 1954). (Jennings 1981; F. E. Warr and M. C. Jennings *in litt.*)

Third, is Meinertzhagen's (1954) source for the statement that fresh eggs of Stone Curlew have been found in May in the Aden Protectorate. This is probably from information for April and May 1945 subsequently collated as Bark Jones and Hartley (1957). Under the heading of Stone Curlew they describe it as,



Plate 1. Adult Spotted Thick-knee *Burhinus capensis*, Yalooni (Oman), June 1984. (Michael Gallagher)

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'Common in the early mornings between Lahej and Sheikh Othman. One specimen was shot and examined. "A handsome large fowl remarkably eyed"—warm buff streaked black, white and cinnamon below, a short strong bill yellow at base with a blackish tip and great staring yellow eyes—long yellow legs with large and prominent tarsal joints. The specimen appeared to coincide with the Sahara form more closely than the Sudan, but might well be *OLDICNEMUS OLDICNEMUS* [sic]. A series of skins would be required to establish the sub species. The specimen bird was streaked not barred or blotched as "*DODSONI*" would be. 24th April 1945, one fresh egg in desert between Fyush and Lahej similar to British eggs but dark in background and lacking in purple tones. One fresh egg 8th May from same district, size 51 mm×35 mm. A very much smaller egg than the egg of the British bird.'

Enquiries about this entry have been unsuccessful. Bark Jones has not been traced, and the other author (P. H. T. Hartley *in litt.*) has no knowledge of the report and was in the UK on the dates given (we have quoted it here in full as the document is not generally available, though a copy has been presented to the OSME library). The first note of warning about these records is the absence anywhere in Bark Jones and Hartley. (1957) of sight records of Spotted Thick-knee—even though the authors mentioned and therefore were aware of *dodsoni*, perhaps regarding it as a race of Stone Curlew rather than of Spotted Thick-knee. This omission of what we believe to be a resident species leads us to the conclusion that either a mistake was made in the identification of the shot bird (which was undated and not preserved), or that it was a migrant Stone Curlew among resident nesting (and misidentified) Spotted Thick-knees. The mention of streaking (if it refers only to the underside) does not exclude Spotted Thick-knee in any case (P. A. D. Hollom *in litt.*; Hollom *et al.* 1988).

If it is to be taken from other remarks in this review that Stone Curlew does not nest in Arabia, and certainly not so far south as southern Yemen, then it must be assumed that the eggs mentioned belonged to *B. capensis dodsoni*—the first description of nesting by that form. However, the chance nesting by Stone Curlew cannot be ruled out entirely, though this would be the sole record from the Arabian peninsula.

In the British Museum (Natural History) collection at Tring there are no eggs of either species from anywhere in Arabia (M. P. Walters *in litt.*, November 1983). Michael Walters compared the eggs of *B. o. saharae* with those of Spotted Thick-knee from Africa and could find no consistent difference; there is a tendency for *saharae* eggs to be paler, 'but there were quite a few eggs which were quite indistinguishable'. Bark Jones and Hartley's measurements are within the range of both.

IDENTIFICATION PROBLEMS

Distinguishing Stone Curlew from *B. c. dodsoni* in the field has been uncertain in the past, due partly to the lack of adequate illustrations of the latter, now provided in Gallagher and Woodcock (1980) and Hollom *et al.* (1988). Other potential problems exist. The race of Stone Curlew known to occur in southern Arabia on passage and in winter is *saharae*; this differs from the main European (nominate) form by being smaller, more rufescent and sandy in coloration, and with the wing pattern more diffuse and less streaked (Vaurie 1965; Cramp and Simmons 1983; Hollom *et al.* 1988). The wing pattern is sharper than in *harterti*, the central Asian race, which is paler, greyer, and less heavily streaked, and may reach Arabia in winter (Vaurie

1965); birds thought to have been *harterti* were seen in northern Yemen in October 1985 (C. G. R. Bowden *in litt.*). When worn or bleached all these plumages are generally paler, dark streaking becomes more pronounced, and the wing-bars become much obscured (Cramp and Simmons 1983).

Adult Spotted Thick-knee should be distinguishable from Stone Curlew by the boldly spotted upperparts, but the lack of wing-bars is not a reliable feature. Several birds have been seen by KSP in the Yalooni area of Oman with ash-white fringes to the feathers of the median and greater wing-coverts showing as a pale streak on the closed wing and as a more obvious white wing-flash in flight, giving the impression of partly obscured wing-bars of Stone Curlew. Small white areas are present on the outer primaries, the base of the inner primaries, and the primary coverts (Hayman *et al.* 1986), which might also confuse the unwary. The pattern of the tertials, which cloak the wing-tip at rest, is diagnostic, however; only in Spotted Thick-knee are they barred (Hollom *et al.* 1988).

We have observed that when the two species are in the same area by day, as occurs during passage and in winter, Stone Curlew is sometimes in the open, whereas Spotted Thick-knee is almost invariably in the shade. However, Stone Curlew will also keep to the shade for periods, as R. F. Porter (*in litt.*) confirms from sightings in Saudi Arabia and Yemen.

VOICE

The calls of Stone Curlew seem not to have been described from its winter quarters and we have no reports from Arabia. The principal call in breeding areas is 'kur-LEE', in which the second syllable is higher pitched and more stressed than the first; there are also wailing calls, uttered in a long rising and falling series, and a musical whistle is used in autumn (Cramp and Simmons 1983; Urban *et al.* 1986). These calls seem to differ markedly from the calls of Spotted Thick-knee described in Martins (1986) and Urban *et al.* (1986), with which we are familiar in Oman. The main feature of these is a series of rapid whistles, 'ti-ti-ti-ti-TEETEETEE ti ti ti', first in crescendo, then dying away. There are also many other piping notes and shrill whistles, sometimes recalling Oystercatcher *Haematopus ostralegus*.

Senegal Thick-knee *Burhinus senegalensis* has a somewhat similar call to Spotted Thick-knee, and wailing calls like Stone Curlew, but unlike Spotted Thick-knee it favours sandy ground near water; it occurs from West Africa to Ethiopia and has not been found in Arabia (Urban *et al.* 1986).

Few observers report the calls, perhaps because they do not listen for them, or recognise them, or appreciate their importance, but some of the reports of occurrence considered below are based only on calls heard. In Oman, the identity of the calling birds has usually been verified by views of the birds themselves, but it is not certain how much reliance can be placed on voice alone. The calls of Stone Curlew would seem to be separable from Spotted Thick-knee, according to the descriptions cited above, but our experience is that Stone Curlew is silent on passage and in winter, and the lack of reports to the contrary lends support to this view. There remain the remote possibilities that if Stone Curlew does call in Arabia the calls may be confused with those of Spotted Thick-knee, and that Senegal

Thick-knee may occur in south-west Arabia and its calls be confused with the others. Vigilance is clearly prudent.

DISTRIBUTION OF SPOTTED THICK-KNEE

Spotted Thick-knee is a widely distributed Afrotropical species in several races from Sudan across to Sénégal, and southward to Cape Province (Urban *et al.* 1986). The race *dodsoni* occurs in the Horn of Africa and in southern Arabia. In Africa, *dodsoni* is a presumed coastal resident on plains of Dahlac Island and in Dancalia (Eritrea, Ethiopia) (Smith 1957), and a fairly common and widespread breeding resident in bushland in north-west coastal areas of Somalia (Ash and Miskell 1983; Urban *et al.* 1986). However, J. S. Ash (*in litt.*, June 1985) says that there appear to be no published breeding records for *dodsoni* in either Ethiopia or Somalia, nor does he have any personal records of occurrence.

In Arabia, the distribution was summarised by Meinertzhagen (1954) as 'south-west Arabia from Asir Tihamah to the Aden Protectorate and Hadramaut from sea level to about 4,500 ft [1,370 m]', though Vaurie (1965) implied that it was restricted to coastal districts within that range. It is now known to be more widely distributed, as follows.

Saudi Arabia

Recorded from 1,980 m at Sha'ib Shid, upper Wadi Tathlith basin between Bisha and Abha (one specimen on 1 June 1936 in BMNH; Bates 1937); Asir Tihamah (Meinertzhagen 1954); and a pair in a stony wadi near 'Juwa' (Juha, 16°44'N 42°50'E) on the Tihamah plain on 15 April 1976 (King 1978). It has also been heard further



Plate 2. Adult female Spotted Thick-knee *Burhinus capensis* with two-day-old chick, Yalooon (Oman), May 1984. (Karen Stanley Price)

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north-west, at approximately 20°30'N 40°30'E, in 1986 (S. Collenette per M. C. Jennings *in litt.*).

Northern Yemen

In March and/or April 1913, at Hajeilah (approximately 15°N 43°30'E), G. W. Bury 'occasionally heard an *Oedicnemus* at night whistling across the mud-flats of the [Wadi] Hejjan after a spate had come down from the hills' (Sclater 1917), and a female Spotted Thick-knee (BMNH number 1965.M.3774) was collected at Ta'izz, 1,370 m, on 23 December 1948, one of five in *Euphorbia* scrub. There were no further records until 1984, since when it has been found in at least 15 sites, mainly in the Tihamah and western highlands, where it is apparently resident, though nesting has not yet been proved (Brooks *et al.* 1987; Redman *et al.* *in prep.*).

Southern Yemen

The race *dodsoni* was described by Ogilvie Grant (1900) from an adult male taken by A. B. Percival and W. Dodson at Lahej (40 km inland from Aden) on 24 August 1899 (BMNH number 1900.8.5.54). Several more were taken later and are also in the BMNH collection at Tring. Meinertzhagen's collector obtained an immature bird, also from Lahej, on 27 May 1922 (BMNH number 1965.M.3778); it is a male chick moulting into juvenile plumage, and proves breeding there, but apparently came too late for comment in Meinertzhagen (1924). A pullus from Fiyush on 17 July 1922, and recently identified as Spotted Thick-knee, is discussed above. The only record from the interior is of a bird shot by soldiers and photographed by MG in Wadi Huteib, south-east of Beihan, at 14°13'N 46°24'E on 11 November 1960. In view of these records and the general distribution of both species, it is evident that *dodsoni* is a breeding resident in southern Yemen.

Oman

A presumed resident from near Salalah at 17°02'N, north-east to at least 21°38'N, it was first obtained by Bertram Thomas and Ali Mohammed on 11 February 1930 'at Al Qatan (2,500 ft [960 m]) just north of the divide on the Qara Mountains' (Kinnear 1931; BMNH number 1930.7.2.8). Al Qatan is the local name for the long, ragged, northern escarpment of Jabal Qara, as Thomas knew, though it does not appear on the maps with his papers. However, the locality can be identified more closely by his campsite for the night of 10–11 February 1930, which was Sa'atan (Thomas 1931, 1932), and though not shown on current maps Thomas shows this as just south of Qarn Shaiba (on current maps the prominent unnamed hill at 17°23'N 54°03'E); both places were on his return route southwards to Salalah through an area of low foothills and dry sandy wadis in which the frankincense tree *Boswellia sacra* is fairly common and amongst which Thomas found his bird.

Also in Dhofar, the southern province, it has since been seen: near Salalah, a presumed pair on the plain at dusk on 16 June 1979 (MG); near Khawr Rawri, 17°02'N 54°27'E, two sitting under a bush on 4 November 1988 (W. F. Simpson); also at Khawr Rawri, a pair with two young two-thirds grown on 2 July 1990 (D. R. Deeks *et al.*); at Wadi Anshayr near Mirbat, 16°58'N 54°45'E, two in shade under acacias on 4 March 1989 (Faisal Al-Lamki); and near Thamarit, just north of the mountains

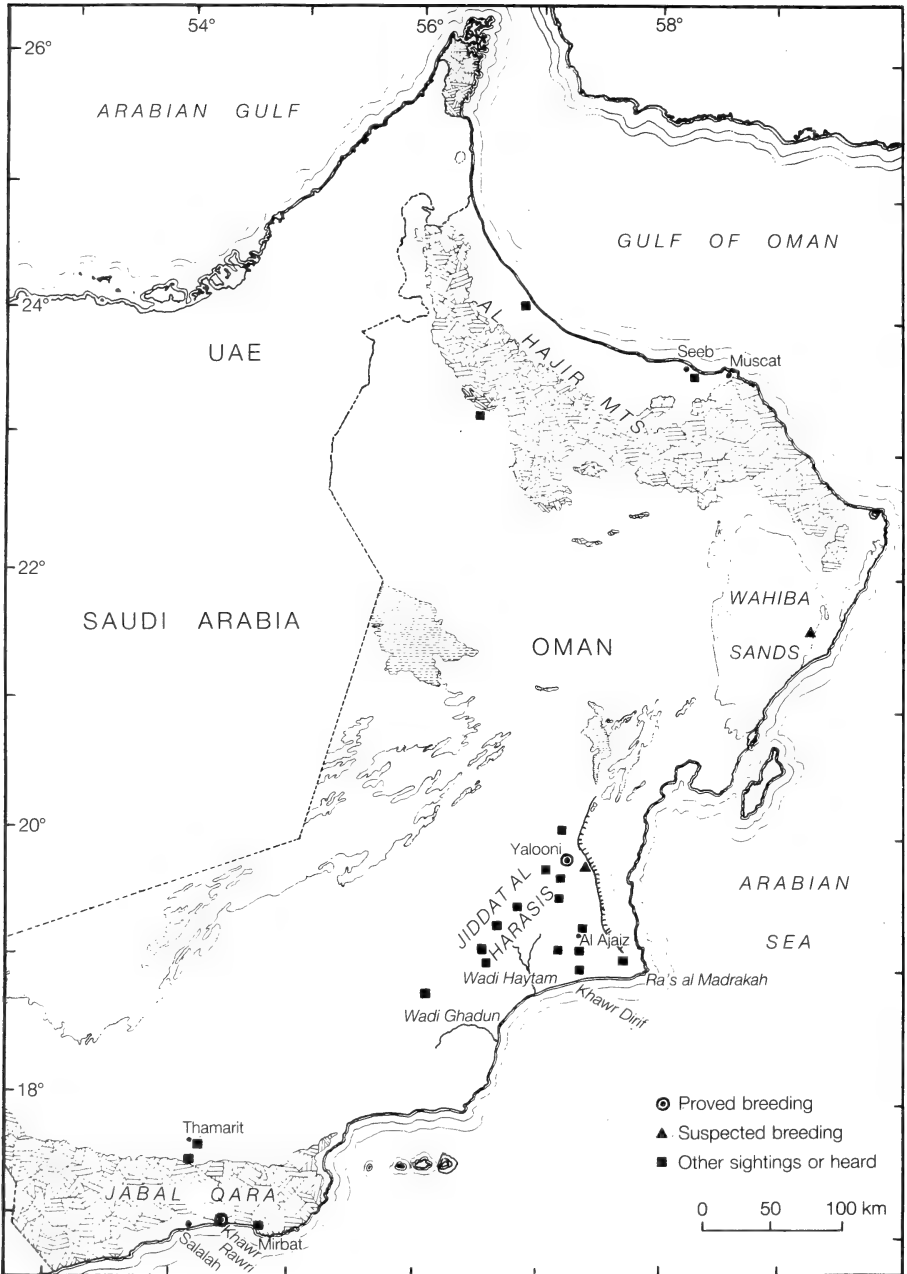


Figure 1. Records of Spotted Thick-knee *Burhinus capensis* in Oman.

at 17°41'N 54°01'E, on 20 May 1984 (S. Tibbett).

Further to the north-east birds have been reported many times seen by day or heard calling between dusk and dawn in the wide area of stony plain, low hills, and stony or sandy wadis inland from Ra's al Madrasah (19°N), including the vicinity of Al Ajaiz, Jalmud, Dhahir, Wadis Haytam and Ghadun, and Khawr Dirif, but particularly on the Jiddat al Harasis around and south-south-west of Yalooni, as described below. In February and March 1986 a pair was seen and heard on dunes under trees at the eastern margin of the Wahiba Sands at 21°38'N 59°18'E, as if breeding (see below).

The only records from northern Oman (i.e. north of 22°N) are in autumn and winter as follows. In 1961–3, it was reported by H. E. Ennion (*in litt.*) as a rare autumn migrant: one inland from Saham on 14 August 1961, one between Ibri and Buraimi on 16 September 1962, and one in the Hajar Bowl (Sayh Hatat) on 2 September 1963. In 1984, one was reported near the Seeb airport (23°35'N 58°19'E), on 28 December (C. M. Greaves). We now accept these records, bearing in mind Spotted Thick-knee's remarkable extension of range into the Wahiba Sands (see below). However, clarification of its status in northern Oman is clearly desirable.

BREEDING OF SPOTTED THICK-KNEE IN OMAN

The establishment of a semi-permanent camp at Yalooni in early 1980 (Stanley Price 1989) enabled KSP to compile detailed records of the birds using this area from April 1981 to September 1985; subsequent records for 1986–8 have been provided by T. H. Tear. The camp is situated on the plain of the Jiddat al Harasis, 19°57'N 57°06'E, at



Plate 3. Yalooni (Oman) in September 1983 after good rains, showing *Acacia tortilis*, *A. ehrenbergiana*, and unpalatable shrubs. (Michael Gallagher)

154 m altitude, in a slight depression (Wadi Yalooni) in which there is a 1-km² area of open woodland of *Prosopis cineraria*, *Acacia tortilis*, and the more bushy *A. ehrenbergiana*. Half of this woodland is a fenced enclosure.

The Jiddat al Harasis is a gently undulating, waterless, limestone plateau bordered to the north by a relatively flat and almost barren plain, to the north-west by the sands of the Empty Quarter, to the east by the abrupt Al Huqf escarpment, and to the south by the Arabian Sea. The area is fairly well vegetated, and there are numerous depressions (hayla) in which sand and rainwater collect, and which in consequence have thickets of trees and many perennial grasses and herbs, with a flush of annuals after good rain. Rainfall is as unpredictable here (Table 1) as elsewhere in the interior desert, but the frequent occurrence of mist or fog (Table 2; Stanley Price *et al.* 1988; Stanley Price 1989), in still air or with a gentle southerly breeze from the Arabian Sea, provides essential moisture for the vegetation and animals.

The bird fauna of the Jidda is diverse and birds are numerous, especially after heavy rain, with the woodland and haylas a particular attraction. The birds

Table 1. Annual rainfall (mm) at Yalooni (Oman), 1981-7.

	1981	1982	1983	1984	1985	1986	1987
Jan	0	0	6.1	0	0	0	0
Feb	0	68.7	24.9	0	0	2.0	0
Mar	11.8	0	0	0	0	0.1	0
Apr	0	0	143.0	0	0	1.1	0.1
May	0	0	0	0	0	0	0
Jun	0	0	0	0	0	6.4	0
Jul	0	0	0	0	0.1	0	0
Aug	0	0	28.0	0	0	0.1	0
Sep	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0
Dec	0	27.0	0	0	0	0	0

Table 2. Number of fogs per year at Yalooni (Oman), 1981-7.

	1981	1982	1983	1984	1985	1986	1987
Jan	11	1	4	2	9	0	4
Feb	8	5	4	7	3	1	5
Mar	6	4	0	7	10	6	6
Apr	3	4	2	6	9	7	6
May	4	8	4	10	7	10	4
Jun	2	2	3	1	4	2	3
Jul	2	1	5	2	0	0	0
Aug	1	4	0	2	3	2	2
Sep	4	10	0	7	7	7	5
Oct	13	18	11	12	11	14	13
Nov	6	2	3	12	8	1	7
Dec	3	7	2	10	8	1	1

occurring are mostly migrants (104 species), and to a lesser extent winter visitors (15 species), but there are at least 22 resident breeding species. The Spotted Thick-knee is a resident, and has been seen under trees by day over most of the Jidda—as far as 30 km north of Yalooni, more than 100 km to the south (near Khawr Dirif), and 130 km south-west (in Wadis Haytam and Ghadun). The birds have been heard calling at night in this huge area in every month (though not in every month of every year), particularly at dusk and dawn, when there is often much activity and chases occur, presumably of a sexual or territorial nature, as also remarked by Martins (1986) in northern Yemen. We have seen chases involving at least three birds at Yalooni, and near Ra's al Madrasah, with the calling continuing intermittently over a wide area during the night. There is some evidence that this activity increases after heavy rain, which improves the vegetation and its associated invertebrate and small vertebrate life, but otherwise calling is heard most intensely from early December till March or May. Although not water-dependent, Spotted Thick-knees will drink when water is available; individuals were often seen at a small artificial pond at Yalooni under light at night, particularly in hot weather. One bird on 17 July 1982 was seen at dusk at the pond, and later seen and heard mobbing a Rüppell's fox *Vulpes rueppelli*.

Breeding observations made near Yalooni from 1983 to 1987 are summarised as follows.

1983

On 22 June at Yalooni, Munaf Kazi saw two birds, which he later identified as Spotted Thick-knees, running from a nest containing two eggs. The nest was in a shallow, unlined scrape or depression in the sand, amongst herbs and short grasses, under the canopy of an *A. tortilis*. In the original colour photograph which was taken, the eggs appear greyish-buff, with small dark brown lines, speckles, and blotches, similar to but much less rich in colour than the egg of Stone Curlew illustrated in Harrison (1975, plate 42, no. 1b).



Plate 4. Nest and eggs of Spotted Thick-knee *Burhinus capensis*, Yalooni (Oman), June 1983. (Munaf Kazi)

KSP returned to Yalooni and visited the site with Munaf Kazi on 27 June, and when 75 m from it two adult Spotted Thick-knees ran off, followed by one very small chick. For the next month she visited the area every five to seven days, but never close enough to photograph or disturb the birds, which were seen on 1, 20, 22, and 25 July. Photographs were taken of the young bird with the parents, when it was about a month old and almost the size of the adults. This nesting occurred after the heavy rain and flooding of the depression in April, and is the first proof of breeding in Oman.

1984

On 13 April, during regular morning and evening tours of the wooded area of Yalooni, KSP saw two Spotted Thick-knees together under an *A. tortilis* about 150 m from the tree which shaded the 1983 nest. From 22 April the two birds were always under the tree, crouching when approached, and nesting was suspected. The nest site was not secluded, being about 10 m from a vehicle track through the woodland, but it was easy to overlook the birds due to their cryptic plumage, immobility, and habit of crouching in small depressions with only the head showing. Often they were noticed only as silhouettes against brighter ground behind their tree. (It is of interest that the 2-m-high chainlink fence of the enclosed part of the woodland, within which Spotted Thick-knees were often seen, was only about 12 m away, along the far side of the track. It seemed a much safer place to nest, being free from disturbance by vehicles and people.)

From 24 April one bird was crouched on the same spot all day, even in full afternoon sunshine, though occasionally panting and changing its orientation; it was obviously incubating. The two birds were individually recognisable when seen together, one being paler and smaller and assumed to be the female. The incubating pair was disturbed as little as possible, and the eggs and nest were not photographed close-up. The birds took turns to incubate, the 'female' more often by day, while the 'male' remained nearby. Later inspection showed the nest to be a very slight unlined depression on level sand (without the appearance of having been deliberately made or decorated), surrounded by many fallen twigs, leaflets, and a few camel droppings. The nest tree was amongst others, and the sandy spaces between them were partly occupied by a scattering of poor-quality, low, perennial vegetation.

The following observations were made using one small vehicle from often as close as 5 m for 10–60 minutes at a time, usually in the early morning and evening. The birds appeared to become habituated to the approach and presence of this vehicle, and when incubating or with small chicks they nearly always remained motionless and rarely was much behaviour noticed. However, a person approaching on foot would cause the birds to run off when the intruder was 30 m distant. Threat display (Urban *et al.* 1986) was never witnessed.

On 4 May two eggs were seen, but the date of laying of the first egg was not determined. On 17 May only one egg could be seen, the first probably having hatched, thus giving an incubation period of about 24 days, which agrees with Urban *et al.* (1986). On 18 May (*day 1*), two very small chicks were seen lying under the standing female, approximately 1 m from the nest; the adults walked 2–3 m away from them and crouched. The chicks were very difficult to see, as their coloration



Plate 5. Young Spotted Thick-knee *Burhinus capensis*, 14 days old, Yalooni (Oman), June 1984. (Michael Gallagher)

Plate 6. Adult Spotted Thick-knee *Burhinus capensis* with 18-day-old young; Arabian gazelle *Gazella gazella* in background, Yalooni (Oman), June 1984. (Karen Stanley Price)



(sandy-brown with a few darker speckles) blended well with the sand, dead twigs, bark, and other detritus amongst which they lay.

On *day 2*, one chick was observed walking into the shade. It had a grey bill with a patch of white behind the nostril, a speckled black stripe through the eye, and a line of black spots under the eye. It was generally grey-buff, paler underneath, the down tinged darker buff in places, with buff speckles on the neck and two lines of black spots running one above and one below the wing.

By *day 7*, the family had moved approximately 150 m to the tree of the 1983 nest site, and they remained in this general area, sometimes moving about 50 m from the tree. The birds were usually seen standing or crouching in or near a deep scrape made by an Arabian gazelle *Gazella gazella*, often sharing the shade with these animals. As many as three other adult thick-knees could sometimes be seen within 50 m of the family. By *day 11*, one chick was obviously larger than the other, and appeared to be the more active of the two.

On *day 14* (1 June), MG visited the site with KSP, and after more observations and colour photography, we described the chicks as follows.

Clad in short, woolly down; upperparts generally pale sandy-buff, appearing grey in some lights, with down of lower back tipped black giving a speckled effect. Prominent whitish patches on lower forehead and ear-coverts enclosed by broken black lines thus: black stripe from base of bill vertically in front of each eye to join horizontal bar across forehead; another stripe from base of bill horizontally to behind ear-coverts, then circling up and forwards to become a stripe through or above the eye and joining the forehead-bar. Indistinct black marks at base of neck, and two parallel rows of blackish spots along back, another along flank under tiny wing; a black mark on bend of wing. Chin, belly, and undertail white; neck, breast, and flank pale sandy-buff, appearing darker buff in some lights. Iris yellow; bill black with dirty yellow base and yellow gape; legs pale green or greyish. The smaller chick differed from the larger in having less bright patches on the forehead and ear-coverts, and greyer iris and legs. The colour shades of both differed according to the intensity of the light.



Plate 7. Adult Spotted Thick-knee *Burhinus capensis* with 21-day-old young, Yalooni (Oman), June 1984. (Karen Stanley Price)

On *day 17* the paler adult was seen to nuzzle the chicks and may have regurgitated twice. After *day 21* the chicks were noted occasionally pecking the ground, and the parents sometimes stalked and caught small food items (presumably invertebrates), whereupon the chicks would run to the adults, but feeding was never observed. By now the larger chick was about half the size of the adults, but the other was still noticeably smaller. The family group became more active and would often be seen walking in the open, although this activity may have been partly in response to the presence of the observation vehicle.

On *day 24* the eyes were yellow; bill black at the tip; yellow at the base; the legs green. On the larger chick the black streaks along back and flank were less distinct, streaks were appearing on the breast, hindneck, and mantle, and there were a few feathers in the tail and on the crown; on both birds black and white streaky feathers were forming on the wings.

By *day 29* it was obvious that the larger chick was still growing faster than its sibling, until by *day 34* it was twice the size of the smaller chick, which appeared inactive and sleepy; it disappeared that night. By *day 35* the remaining chick was



Plate 8. Young Spotted Thick-knee *Burhinus capensis*, 35 days old, Yalooni (Oman), June 1984. (Karen Stanley Price)

now very streaked and marked, and the white on the face very clear. The large chick was not seen again, although what were thought to be the parent birds were seen in the usual area over the next few days.

A five-week break in the observations then occurred, after which the pair was seen once with a smaller bird, streaked rather than spotted, and possibly their young; three other adults were seen within 50 m of this group. The same-coloured pair was seen here on many occasions until May 1986, when the presumed male was seen chasing the paler bird. During 1984 two other presumed pairs were seen at Yalooni.

1985-8

Signs of subsequent nesting of Spotted Thick-knee in Oman are as follows.

1985. Two adults seen 'pairing' 20 km south of Yalooni on 20 January (T. H. Tear). Two birds at the 1984 nest site on 7 March in plumage resembling the nesting pair of that year, followed by much night activity, particularly in March (KSP).

1986. An adult with two 'youngsters' at Tulla Dhuru, 85 km SSW of Yalooni, on 10 June (T. H. Tear). Much calling and a pair on dunes under trees on the eastern border of the Wahiba Sands at Qarhat Mu'ammarr (21°38'N 59°18'E) in February and March (Gallagher 1986, 1989).

1988. This was the fourth year without rain at Yalooni, though it rained in February to the south, and in late July just to the north. Heard calling at Yalooni on most evenings, at least until April. In May, heard on a few evenings, but no other records until October, when heard and seen in camp again. Though the birds may have been at Yalooni throughout the summer, but quiet, it is assumed that they moved to nearby areas where rain had fallen. (T. H. Tear.)

Comments on breeding records

1984 was a year without rain at Yalooni. Most trees still had dense foliage after the floods of April 1983, but the vegetation of the palatable herb layer had largely dried out and disintegrated. This contributed to the death of several gazelles, and it was probably too difficult to raise two thick-knee chicks that year. The chick of 1983 had grown much faster than either of those of 1984, and photographs of it at one month old show it to be three-quarters or more of the size of its parents. Perhaps neither of the 1984 chicks obtained sufficient food for the rapid growth which characterised the 1983 chick, and which presumably is a necessity for survival. Two eggs were laid in both years, but only one chick was seen in the 1983 nesting, and of the two which hatched in 1984 (after about 24 days and within a day of each other) only one survived after the 34th day.

Possible predators in the Yalooni area include red fox *Vulpes vulpes*, Rüppell's fox, caracal *Caracal caracal*, Barn Owl *Tyto alba*, Little Owl *Athene noctua*, shrikes *Lanius*, Brown-necked Raven *Corvus ruficollis*, grey monitor *Varanus griseus*, snakes, and camel-spiders (Solifugae).

The descriptions of the 1984 chicks on day 14 (1 June) agree well with that of the chick previously unidentified from Fiyush (discussed above), except that the latter is perhaps a little older and shows an indistinct broken black line down the centre of the crown to meet a transverse bar on the hindcrown, and the black line behind the eye is bifurcated. The label for this specimen describes the iris as slate, feet lemon-yellow, and bill greenish-horn. Allowing for differences in age, in individuals, and in lighting, these descriptions tally fairly well with that given in Urban *et al.* (1986) for another race of Spotted Thick-knee. The specimens of *saharae* Stone Curlews examined at Tring have, amongst other differences, additional black lines across the forehead, and on crown and nape (where they are joined by an extension of the moustachial stripe) extending as two pronounced black stripes along the back.

CONCLUSIONS

From the evidence presented here, Spotted Thick-knee is a resident in Arabia from south-west Saudi Arabia to central Oman, with an extension into northern Oman at least in autumn and winter; nesting in Oman and southern Yemen has been proved. The species occurs in semi-desert, where the presence of surface water is not essential, but where trees or bushes are necessary for cover and nesting. Nesting is probably annual, and is stimulated by rainfall and inhibited by droughts. At Yalooni, where some birds were seen or heard every year, there is circumstantial evidence that they move to exploit areas nearby, where vegetation has improved as a result of recent, very localised, rainfall.

Although said to be monogamous and a solitary nester (Urban *et al.* 1986), at least three other birds have been seen within 50 m of the nest of another pair; the status and role of these birds is not known. Birds remain under cover by day, but call and fly around the nesting area between dusk and dawn; the extent of this movement is not known, but it is presumably of a sexual and territorial nature.

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Observations on the Cyprus Pied Wheatear *Oenanthe pleschanka cypriaca*

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Summary The Cyprus Pied Wheatear *Oenanthe pleschanka cypriaca* was studied during two weeks in May. It was found in a wide variety of habitats, including woodland where it perhaps occupies the niche utilised by Redstart *Phoenicurus phoenicurus* further north. One territorial male sang over an area of 3.3 ha (with a core area of 0.6 ha) but regularly foraged beyond this. Only one territorial interaction between males was observed. Song-posts were high for a wheatear: 59 per cent were 5–10 m above ground. One male used 11 song-posts (five regularly) and was present on them for 50 per cent of the time in the early morning and 93 per cent of the time in the evening. Data on song structure are given; 80 per cent of song bursts contained 1–10 phrases. Wing-flicking behaviour and one nest-site are described.

THE LITERATURE on the Cyprus Pied Wheatear *Oenanthe pleschanka cypriaca* is not extensive, Cramp (1988) noting that there have been no detailed studies. Christensen (1974), Sluys and van den Berg (1982), and Bergman (1983) reported mainly on the distinctive song, female plumage, and biometrics, leading to the suggestion that this form should be considered a separate species rather than a race of *O. pleschanka*. None of the authors gives much emphasis to the more arboreal habits of this form compared with its congeners. This paper reports principally on aspects of habitat, territory, and behaviour associated with song studied in western Cyprus in May 1988.

METHODS

While on holiday near Polis in the extreme north-west of the island from 11 to 25 May I was able to devote some time to making observations on the Cyprus Pied Wheatear in that district and at various places along the west and south coasts as far east as Akrotiri as well as in Paphos Forest. The habitat and details of the song-posts of all singing males were noted and more detailed observations were made of the territory and behaviour of one male resident at Lachi, near Polis. Other less intensive observations of territory and behaviour were made elsewhere as opportunity offered. In the absence of large-scale maps and suitable equipment, distances were estimated by pacing, and heights by eye.

HABITAT

The catholic habitat choice of this form is well known. I visited a wide variety of habitats up to 1,300 m and found it absent only from beaches, dunes, salt and freshwater marshes, the centres of towns, and, apparently, areas of dense scrub of uniform height except where these occurred on steep slopes or above cliffs (see Discussion, below).

DENSITY

Christensen (1974) noted that males often sing close together. In this study, the distances between singing males varied between about 100 and 400 m, though at Lachi there was a gap of almost 1 km between two males even though the intervening land—which was mainly cultivated fields with scrub and trees, backing dunes and a beach—appeared to offer suitable song-posts as well as, presumably, food and nest-sites.

TERRITORY

The territory of the male watched intensively at Lachi was delineated by reference to the song-posts used. These numbered 11, of which five were used regularly and four were seen to be used only once. The area encompassed by the song-posts was some 3.3 ha (roughly 200×165 m) though the part bounded by the most regularly used posts was only about 0.6 ha (roughly 200×30 m). The male regularly foraged in one area at least 50 m beyond the boundary marked by the main song-posts.

Although one other male sang regularly some 150–200 m from the individual predominantly studied, and another did so occasionally from posts about 100 m away, only one interaction was noted between these. Surprisingly, this was when the male being studied flew directly some 150 m from his territory to one of the adjoining males—who at that time was on the ground below his regular song-post—and briefly attacked him, then immediately flying back to his own territory. No reason was identified for this apparently unprovoked incident. The absence of intraspecific interactions was presumably due to the lateness of the season, the territories of males no doubt being, by then, well established and generally respected by neighbours.

Interspecific interactions were equally rarely noted. A tree used regularly as a song-post by the Lachi male served the same purpose for both a Cyprus Warbler *Sylvia melanothorax* and a Corn Bunting *Miliaria calandra*, yet I never witnessed aggression between any of these three individuals. On the other hand, when a small party of Goldfinches *Carduelis carduelis* descended onto the tree when the wheatear was singing there he quickly flew off.

Female wheatears were seen rather rarely compared with males, no doubt

Table 1. Sites of 37 song-posts of Cyprus Pied Wheatear *Oenanthe pleschanka cypriaca*, May.

Site	Frequency
Trees	19 (52%)
Telegraph poles	8 (22%)
Buildings (inc. a TV aerial)	4 (11%)
Overhead lines	2 (5%)
Rocks	2 (5%)
Bushes	2 (5%)

Table 2. Estimated height above immediate ground level of 37 song-perches used by Cyprus Pied Wheatears *Oenanthe pleschanka cypriaca*, May.

Height (m)	Frequency
0.5–4	10 (27%)
5–10	22 (59%)
12–25	5 (14%)

because many were incubating. At the Lachi site, a female, perhaps the mate of the territorial male, was most often seen feeding in the same area in which the male frequently fed, outside his main song territory. In spite of intensive observations of this territory no nest was discovered. On two occasions a female landed in one of the trees from which the Lachi male was singing. On the first occasion she alighted just below the male who immediately dropped down and apparently tried to mate with her, returning quickly to his original perch; the female then flew up nearer him and he departed. On the other occasion there was no apparent interaction between them.

SONG-POSTS

Details were noted of 37 song-posts, including the 11 used by the Lachi male and a number of other instances of different posts being used by the same male (Table 1). The frequency distribution of recorded sites is not, however, necessarily indicative of males' preferences as more observations were made in cultivated and scrub areas than in forest. In all but four instances the perches were at the very top of the tree or structure, and in most cases involving trees or bushes dead or sparsely leaved twigs were used. Over half the perches were 5–10 m high (Table 2), though all those at 4 m or less were on banks, slopes, or cliff edges so that in at least one direction the effective height was much greater.

The activity of the male at Lachi was recorded during four periods totalling 2 hours 5 minutes in the mornings (earliest 06.25 hrs, latest 08.12 hrs) and for one period of 30 minutes in the evening (18.10–18.40 hrs). In those periods he was present on song-posts for 50 per cent of the time in the morning but 93 per cent of the time in the evening. A tendency to be present on song-posts more often in the evenings was also evident in additional spot-checks made at other times (Table 3).

Song-posts were used additionally for flycatching, pouncing on prey on the ground (even from the tops of telegraph poles), and occasionally for preening. Regular feeding by pouncing was, however, normally performed from lower perches, up to 3 m high.

Table 3. Presence or absence of one male Cyprus Pied Wheatear *Oenanthe pleschanka cypriaca* on song-posts during 42 spot-checks at Lachi, May.

Time	Present	Absent
06.00–09.59	7	11
10.00–17.59	5	7
18.00–20.05	9	3

Table 4. Number of phrases per song burst ($n=136$) of two male Cyprus Pied Wheatears *Oenanthe pleschanka cypriaca*, May.

Number of phrases per song burst	Frequency
1–10	109 (80%)
11–20	19 (14%)
21–30	4 (3%)
31–40	1
41–50	2
51	1

SONG

The distinctive song is delivered in discrete bursts, each composed of a number of phrases (a purring 'bizz-bizz-bizz': Hollom *et al.* 1988) such that individual phrases can readily be distinguished by the human ear. In the absence of sound-recording equipment the number of phrases per burst of song was counted during five separate periods involving two males and the results are shown in Table 4, which reveals that while the great majority of song bursts were of short duration there were occasional much longer ones. Sluys and van den Berg (1982) illustrated sonagrams showing 5, 11, and 12 phrases per 2 s of singing and noted that each song burst lasts 2–10 s (mean 8.4 s). Bergman (1983) found that bursts lasted several seconds or even a minute. The length of song bursts was not timed in the present study, but taking the average of 4.6 phrases per second derived from Sluys and van den Berg's sonagrams and applying this to the number of phrases counted in the present study suggests that these males sang predominantly for periods of up to 4 s but also for periods as long as 11 s.

DISPLAY

The only display noted was wing-flicking. This was often performed at low intensity by males on song-posts. It was seen in a more exaggerated form with a momentary pause at the maximum extent of the wing-flick when a male was facing a nearby female and on another occasion when it was directed at a second male in the presence of a female. It was also used in the course of the attack launched by the Lachi male on his neighbour (see Territory, above). When viewed from the front the black area formed by the under wing-coverts, breast, and throat revealed during the pause in the wing-flick formed a bold and prominent feature, contrasting with the white crown and belly.

NEST

Only one nest was found, on 22 May in Paphos Forest, and this contained four young some three to four days old. It was on a ledge below an exposed tree root about 1.5 m up a steep mud bank facing an open area near a track in the forest. The nature of the site was as described by Bannerman and Bannerman (1971) though perhaps more exposed than usual, since according to Cramp (1988) nests of *O. pleschanka* are generally in holes.

DISCUSSION

While the nominate form of the Pied Wheatear *O. p. pleschanka*, the Black-eared Wheatear *O. hispanica*, and Hume's Wheatear *O. alboniger* are occasionally found in woods (Cramp 1988), the Cyprus Pied Wheatear is unique amongst west Palearctic wheatears in its regular occupation of heavily wooded terrain. Even where it occurs in more open localities its choice of comparatively high song-posts, as found in this study, also distinguishes it from its congeners who mostly use

either lower perches or sing in flight. Where it occurs in woods, it appears to occupy a niche similar to that exploited elsewhere in the west Palearctic by the Redstart *Phoenicurus phoenicurus* which is only a passage migrant in Cyprus (Flint and Stewart 1983). Its absence from built-up areas seems likely to be due to the lack of suitable food supplies, while scarcity of song-posts, and perhaps of nest-sites, may explain its absence from dunes and marshes. My observations were not extensive enough to confirm that it avoided areas of dense scrub of even height, but if that is so it may be due to the absence of suitable elevated song-posts (an explanation which would receive support if males were to be found in uniform scrub areas on slopes or by cliffs where they could sing from perches with a view in at least one direction).

The distances recorded between singing males are broadly consistent with Christensen's (1974) observations. Those data, and the size of the core territory of the Lachi male, fall within the ranges given for the nominate form by Cramp (1988), who also noted in respect of that race that some feeding is done outside the territory, as was the case with the Lachi male. Cramp also referred to the absence of clearly marked territory limits.

The Lachi male used principally a small number of song-posts in a core area, with other more distant ones being visited less often. The nature of the song-posts used in every case observed was such that the male had a reasonable, if not commanding, view aided by the preference for perches clear of obstructions or dense vegetation. No doubt the prominence of the perches used serves the dual purpose of enabling a clear view to be obtained of rivals and of advertising the presence of the singing male. Although almost no interaction, other than singing, was noted between males, this is likely to have been due to the stage of the breeding cycle, territories having presumably already become well established and recognised. The single case noted of aggression between two males was remarkable in as much as the aggressor flew from the centre of his own territory into the centre of his neighbour's in order to attack the latter. Bannerman and Bannerman (1958) noted that male Cyprus Pied Wheatears were extremely pugnacious. The wing-flicking regularly observed is evidently similar to that described as characteristic of the nominate race, forming part of its threat posture (Cramp 1988). The data collected on song are consistent with those presented by Sluys and van den Berg (1982) and Bergman (1983).

Most observations reported here are thus consistent with what is known of the nominate form, principal exceptions being the song (as already described by Sluys and van den Berg 1982 and Bergman 1983) and the extensive use of woodland coupled with the choice of song-perches typically very much higher than those used by any other west Palearctic wheatear. Such differences in choice and use of habitat are not, by themselves, evidence that two forms should be regarded as separate species but they may be thought to lend support to Sluys and van den Berg's suggestion that this treatment would be appropriate in the case of the Pied Wheatear and Cyprus Pied Wheatear.

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Additions to the country list produced by the Kuwait Avifaunal Survey, 1985-7

C. W. T. PILCHER, G. GREGORY, A. TYE, and M. S. AHMED

Summary During an avifaunal survey of Kuwait, conducted over a two-year period, 1985-7, 251 species were recorded including five new to the country: Levant Sparrowhawk *Accipiter brevipes*, Dunn's Lark *Eremalauda dunni*, Small Skylark *Alauda gulgula*, Richard's Pipit *Anthus novaeseelandiae*, and (also new for Arabia) Dusky Thrush *Turdus naumanni eunomus*. Descriptions of these birds are given and other rarely recorded species are listed.

CONSERVATION has become a matter of concern for the Gulf countries, and in Kuwait 1980 saw a commitment on the part of the Environment Protection Council (EPC) to survey the local flora and fauna and to take any action necessary to protect endangered species. Consequently, one of us (CWTP) proposed to the EPC a project whose primary aim was to conduct an extensive, country-wide survey of Kuwait's avifauna. In addition, it was intended to produce up-to-date records from Kuwait for inclusion in the Atlas of the Breeding Birds of Arabia (Jennings 1985).

The EPC gave generous support to this proposal and the project covered a period of two years, from April 1985 to April 1987. This communication reports five first records for Kuwait obtained during the project, one of which, Dusky Thrush *Turdus naumanni*, was also new for Arabia. The full results of the survey are to be published as an EPC Research Report (Pilcher *et al.* in press) and will be summarised elsewhere (Pilcher in prep.).

The survey located 251 species all of which, except the five described in detail below, had previously been listed for Kuwait (Haynes 1979; Bundy and Warr 1980).

It is worthy of note that 24 species were observed that had not been reliably recorded during the previous 5-20 years or that were currently recognised as having vagrant status (Table 1). Moreover, of these, the following six species occurred in two of the three years covered by the survey: Namaqua Dove *Oena capensis*, Cetti's Warbler *Cettia cetti*, Yellow-browed Warbler *Phylloscopus inornatus*, Yellow-throated Sparrow *Petronia xanthocollis*, Brambling *Fringilla montifringilla*, and Black-headed Bunting *Emberiza melanocephala*. This may reflect an increase in the extent and regularity of observer coverage, but the creation of new habitats and expansion of old ones makes an actual change of status a possibility where certain of these species are concerned. Habitat development has, for instance, almost certainly been responsible for the recent change in status of the Moustached Warbler *Acrocephalus melanopogon* (Pilcher 1988).

The following details are of species that are new to the Kuwait list.

Levant Sparrowhawk *Accipiter brevipes*

On 7 November 1986, MSA, GG, and CWTP were surveying a farm at Al-Abraq

Table 1. Vagrant species recorded during the Kuwait Avifaunal Survey, 1985-7.

	Locality	Date*
Golden Eagle <i>Aquila chrysaetos</i>	1	26 Mar 86
Demoiselle Crane <i>Anthropoides virgo</i>	2	17 Mar 86
Pacific Golden Plover <i>Pluvialis fulva</i>	3	
Great Snipe <i>Gallinago media</i>	4	
Woodcock <i>Scolopax rusticola</i>	5	
Palm Dove <i>Streptopelia senegalensis</i>	3, 6	Mar 86, Apr 87
Namaqua Dove <i>Oena capensis</i>	6, 7	18 Mar 86
Citrine Wagtail <i>Motacilla citreola</i>	4	6 Mar 86, 20 Mar 87
White-crowned Black Wheatear <i>Oenanthe leucopyga</i>	8	7 Mar 87 (p)
Redwing <i>Turdus iliacus</i>	5	
Mistle Thrush <i>T. viscivorus</i>	5	
Cetti's Warbler <i>Cettia cetti</i>	9	27 Mar 87 (t), 3 Apr 87
Grasshopper Warbler <i>Locustella naevia</i>	5	(t)
River Warbler <i>L. fluviatilis</i>	9	(t)
Savi's Warbler <i>L. luscinoides</i>	9	20 Mar 87 (t)
	4	27 Mar 87
Clamorous Reed Warbler <i>Acrocephalus stentoreus</i>	9	3 Apr 87 (t)
Yellow-browed Warbler <i>Phylloscopus inornatus</i>	5, 9	(p)
Pale Rock Sparrow <i>Petronia brachydactyla</i>	10	28 Mar 87
Yellow-throated Sparrow <i>P. xanthocollis</i>	9	3 Apr 87 (p)
Brambling <i>Fringilla montifringilla</i>	5, 11	22 Feb 87 (p)
Trumpeter Finch <i>Bucanetes githagineus</i>	5	
Scarlet Rosefinch <i>Carpodacus erythrinus</i>	5, 9	(p)
Cretzschmar's Bunting <i>Emberiza caesia</i>	9	(p)
Black-headed Bunting <i>E. melanocephala</i>	9	(t)

* Some data are presently unavailable due to the political situation in Kuwait.

Localities:

- 1 Al-Abdaliyah Radio Station 29°00'N 47°45'E
- 2 28°39'N 48°16'E
- 3 Sulaibikhat 29°19'N 47°52'E
- 4 Jahra Pool 29°22'N 47°42'E
- 5 Al-Abraq Al-Khabari 29°23'N 46°55'E
- 6 Kuwait City 29°20'N 48°E
- 7 Manageesh 29°05'N 47°35'E
- 8 Jal Az-Zor 29°31'N 47°46'E
- 9 Umm Al-Aish 29°49'N 47°45'E
- 10 Wadi Al-Batin 29°12'N 46°42'E
- 11 Kazimah 29°24'N 47°45'E

(t) trapped and examined in the hand

(p) photographed in the field

Al-Khabari when a small *Accipiter* was found dead in a low tree. Doubtless the bird had been a victim of the continual shooting there and appeared to have been dead for several weeks. It showed a dark central throat-stripe and streaks on the breast. Suspecting a Levant Sparrowhawk or Shikra *A. badius* we measured and described the specimen. It was photographed next to two dead Sparrowhawks *A. nisus*, a

sub-adult and an immature, which had been shot minutes earlier by local hunters.

Upperparts. Generally as for immature Sparrowhawk except for 5–6 dark bands on outer tail-feathers.

Underparts. Cheeks streaked grey and white; chin and throat off-white with central grey stripe; breast and flanks with brown lanceolate streaks; belly and under tail-coverts with heart-shaped pale brown marks; tail grey with 6–8 dark grey or blackish bands visible; outer primaries blackish-grey, contrasting with paler inner primaries and secondaries; dark grey barring on all flight-feathers.

Bare parts. Eye decayed; cere horn with yellow patches, darker below; bill black with pale grey base; legs and feet pale yellow-green; claws black.

On wing length (209.5 mm) and plumage, confusion with juvenile female Shikra was possible but the following features confirmed the specimen as a juvenile male Levant Sparrowhawk: wing more pointed, primary numbers 6 and 10 (numbered descendently) shorter; emargination of outer webs present only on primaries 6–9; inner webs of primaries 8–10 notched; outermost tail-feather 9 mm shorter than innermost.

The breeding range of Levant Sparrowhawk lies in south-east Europe, parts of Turkey, south European USSR, and western Iran (Cramp and Simmons 1980). Wintering apparently takes place in Africa and the main passage is through the Levant with very little movement west of Sinai. Despite the presence of breeding birds in Iran, the species is only a vagrant to the Gulf states of Arabia, having been recorded in eastern Saudi Arabia, Bahrain, and the United Arab Emirates (Bundy and Warr 1980; Bundy *et al.* 1989).

Dunn's Lark *Eremalauda dunnii*

During a visit to the sandy gravel plain just west of Al-Mazira a party of four larks was observed by AT on 17 March 1987. It was possible to approach in a vehicle quite close to one, which was identified as Dunn's Lark.

Size and shape. About the size of Lesser Short-toed Lark *Calandrella rufescens* or slightly larger. The wings were held slightly away from the body as Desert Lark *Ammomanes deserti* often does.

Head. Appeared large; crown distinctly streaked. Conspicuous markings on the face distinguished the bird from Desert Lark and Bar-tailed Desert Lark *A. cincturus*: a wide pale eye-ring was itself encircled by narrow dark markings that extended backwards behind the eye, having the effect of making the eye appear enormous.

Upperparts. Sandy-pinkish-buff, all with fine dark streaking.

Tail. Plain sandy when closed, but in flight blackish outer feathers gave it a darker appearance than the back. Central feathers noticeably paler than outers.

Underparts. Breast pale whitish-buff without dark spots or streaks but light streaking at sides just discernible.

Bare parts. Bill pale horn, larger and heavier than that of Lesser Short-toed Lark. Legs pinkish.

Voice. The bird was silent.

This lark has a Saharo-Sindian distribution, being mainly resident in a region extending from the southern Sahara through southern Sudan and across the Arabian deserts. It is a common resident in central Saudi Arabia (Jennings 1981) but is less regular in the Eastern Province, appearing to be nomadic both as a breeding and as a wintering bird (Bundy *et al.* 1989). To the north of Saudi Arabia it has been recorded as accidental in Israel where it also recently bred (Round and Walsh 1981; Shirihai in press).

Small Skylark *Alauda gulgula*

While surveying at Jahra Pool on 11 November 1986, MSA, GG, and CWTP observed a solitary lark foraging along a narrow strip of sand between reedbeds and a metalled road. The first impression was of a Woodlark *Lullula arborea*, but on being disturbed it flew off uttering a call unlike that species. It landed about 250 m away and we were able to follow and approach to within 12–15 m. The following description was obtained, and the bird was identified as Small Skylark.

Size and shape. A small to medium-sized lark, shorter tailed and more compact than Skylark *A. arvensis*, and having an overall resemblance to Woodlark.

Head. Crown finely streaked blackish-brown. At times the lateral streaks appeared to form a dark border to the upper edge of the broad whitish-buff supercilium, which contributed to a capped appearance (commented on by Brown and Palfery 1986). Long, conspicuous supercilia merged into a pale buff forehead and extended back onto the nape. Distinct eye-ring whitish-buff like supercilium; lore and ear-coverts pale buffish-brown.

Upperparts. Generally buff with broad, dark brown striations; rump paler. Median coverts dark brown, producing dark bar on closed wing (as noted by Brown and Palfery 1986). Primary coverts lacking white–black–white pattern characteristic of Woodlark. Tail brown, outer feathers with pale buff fringes.

Underparts. Generally pale buff but belly and vent whitish; breast-streaks dark brown merging across upper area to form a line denser and wider at the sides. The buff of the breast extended lower than the streaking of Woodlark and the border between buff breast and white belly was quite sharp.

Bare parts. Bill like that of Skylark in size and shape; pale horn. Legs pinkish-brown.

Voice. The only call heard was a buzzing 'bzezb' given in flight.

Behaviour. During the time it was under observation on the ground it adopted a crouched attitude while foraging on sheep droppings but we could not determine whether it was eating undigested seeds or insects.

The Small Skylark replaces Skylark across central and southern Asia. The species is polytypic and its breeding range extends from eastern Iran to south-east Asia and the Philippines (Cramp 1988; Hollom *et al.* 1988). Some races are migratory, including *inconspicua*, which is the form breeding nearest to Kuwait, in Iran. Small Skylark has been recorded in Bahrain, where it wintered in 1978–9 (F. E. Warr pers. comm.). More recently, the species wintered in eastern Saudi Arabia in 1984–5 (Brown and Palfery 1986) and in Israel in the same and the following winter (Shirihai 1986). In the first Israeli records the race was shown to be *inconspicua*, though it is not known to which race the recent Saudi Arabia and Kuwait birds belonged. Since this first sighting in Kuwait a Small Skylark was seen again, also at Jahra Pool, on 6 November 1987, and there was a further record of one early in the winter of 1988 or 1989 (full data are presently unavailable due to the political situation in Kuwait).

Richard's Pipit *Anthus novaeseelandiae*

On 18 October 1985, MSA, GG, and CWTP observed and photographed a large pale pipit on a small cultivated plot at one of the farms at Al-Abraq Al-Khabari. It was watched for a period of two hours at ranges as close as 10 m. It spent most of this time on the ground feeding.

Size and shape. Noticeably larger than nearby Tree Pipits *A. trivialis*, with a more upright stance and relatively longer, stouter legs.

Head. Prominent, broad, buffish-white supercilium, bordered darker. Ear-coverts with dark

fringe joining dark eye-stripe. Chin and throat off-white; dark malar stripe merging into heavy streaking at lower side of neck and upper breast. Whole facial area encircled by whitish crescent extending from hind supercilium below cheek to merge with chin.

Upperparts. Back and rump brownish-grey streaked dark brown; wings generally brownish-grey, with a dark bar on median coverts and pale panel formed by buff fringes of outer greater coverts.

Tail. Colour like back, with white edges to outer feathers.

Underparts. Upper part of pale buffish-white breast streaked brownish-grey. Flanks warm buff; belly off-white, vent slightly darker.

Bare parts. Bill large, pale brown; inside of mouth yellowish-orange. Eye dark brown. Legs pale pinkish-brown; feet with very long, large hind claws.

Voice. When disturbed it flew into any nearby tree and uttered a fairly loud 'spurrp' call.

Richard's Pipit has an extensive distribution across Africa, Asia and Australasia. It is accidental to most Middle Eastern countries (Hollom *et al.* 1988), and according to Cramp (1988) occurrences in the west Palearctic are of the central Asian race *richardi*. We do not know to which race the Kuwait bird belonged, though it was probably too pale for *richardi* and may have been *dauricus* or *centralasiae*.

Dusky Thrush *Turdus naumanni eunomus*

On 16 January 1987 CWTP discovered a thrush foraging in a furrow on one of the small agricultural plots on a farm at Al-Abraq Al-Khabari. During two brief views a large white supercilium and half-collar were visible on the head and a conspicuous double black breast-band on white underparts was noted. The back was dark brown and tail blackish. The bird was not seen again that day but was tentatively identified as a Dusky Thrush. Two weeks later, what was probably the same individual was seen in the same locality by MSA, GG, and CWTP, when it was viewed clearly on the ground at about 30 m. During the next four hours it was observed intermittently and photographed. It was last seen on 13 February.

Size and shape. Typical thrush shape with a rather square tail; somewhat sturdier than nearby Song Thrushes *T. philomelos*.

Head. Crown dark brown. Supercilium bright white, starting at forehead and becoming very wide above and behind eye. Eye-stripe, cheek, and ear-coverts formed a fairly well-defined dark brown patch, becoming blackish towards tips of ear-coverts. Chin and throat white; white half-collar; thin blackish malar stripe extended to meet dark upper breast-band.

Upperparts. Back and scapulars dark brown, with indistinct darker streaking/scalloping. Rump and upper tail-coverts dark brown with slight rufous tint observed in flight. Upper wing-feathers edged pale, warm brown, giving folded wing a pale appearance.

Tail. Blackish, contrasting with upper tail-coverts.

Underparts. Prominent blackish double breast-band, the upper one unbroken, broad and separated by a narrow white strip from the more diffuse lower one, which extended along the flanks in the form of crescent-shaped spots. Belly, vent, and thighs white. Under tail-coverts blackish. Underwing orange-rufous in centre.

Bare parts. Bill dark with pale base and cutting edges. Eye dark. Legs blue-grey.

Voice. When flushed, a double or triple 'chk' note, rather like a Blackbird *T. merula* or Fieldfare *T. pilaris*. On alighting in a tree, it gave a single 'chk'.

Behaviour. When on the ground it fed, hopped, and walked in typical thrush manner, sometimes holding its wings below body level. It was very shy and difficult to approach and preferred shady areas under trees.

T. naumanni has two populations: the south-east Siberian, nominate race (Naumann's Thrush) and the north Siberian *eunomus* (Dusky Thrush). The latter has

a distribution from central and northern Siberia east to Kamchatka and overlaps with Naumann's Thrush, which has a more limited east-west range but extends southwards to the Sayan Mountains (Cramp 1988). The species winters in Japan, China, Korea, and Taiwan but has been recorded as accidental to many European countries. Most records from northern Europe are of *eunomus* while nominate *naumanni* accounts for the majority from southern countries. In the Middle East, an intermediate occurred in Cyprus in November 1958 (Bourne 1959) and nominate *naumanni* was recorded in Israel in November 1982 (Paz 1987). The record reported here is the first for the species in Arabia.

ACKNOWLEDGEMENTS

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Records of Brown-headed Gull *Larus brunnicephalus* and Grey-headed Gull *L. cirrocephalus* around Arabia

W. R. P. BOURNE and GRAHAM BUNDY

Summary Reports of Brown-headed Gull *Larus brunnicephalus* and Grey-headed Gull *L. cirrocephalus* from around Arabia are re-examined in the light of developing experience of the difficulty of separating them in non-breeding plumages. Size is one of the more important characters, since the Brown-headed Gull is larger, and, while it normally has more prominent brown markings, it should be noted that moulting birds can have greyish hoods. First-winter Brown-headed Gulls have been seen at sea off eastern Arabia in the winter four times, and a bird originally identified as a Grey-headed Gull off eastern Saudi Arabia in April 1981 might also have been a second-year Brown-headed Gull or a hybrid between them.

THE BROWN-HEADED (or Indian Black-headed) Gull *Larus brunnicephalus* breeds in central Asia and winters along the coasts to the south from Pakistan to Hong Kong—where Michael Casement (pers. comm.) informs us that in Bombay it occurs further inside the harbour than Black-headed Gull *L. ridibundus*, which tends to feed at sea in this area. It is replaced in tropical Africa and South America by the allied Grey-headed Gull *L. cirrocephalus*, in southern Africa by the pale-grey-headed Hartlaub's Gull *L. hartlaubii*, and in Australasia by the white-headed Silver Gull *L. novaehollandiae*, which together form a distinct group of gulls showing a



Plate 1. First-winter Brown-headed Gulls *Larus brunnicephalus*, Bangpoo (Thailand), January. (R. F. Porter)

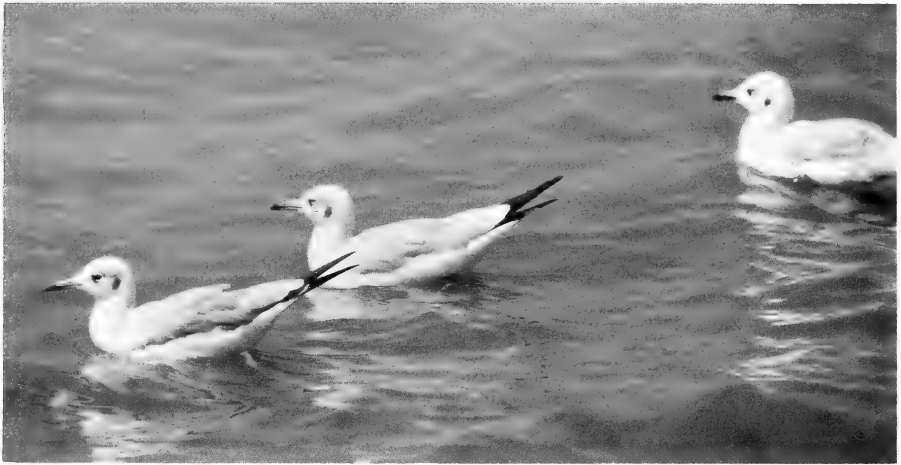


Plate 2. Non-breeding Brown-headed Gulls *Larus brunnicephalus*, Bangpoo (Thailand), January. (R. F. Porter)

white centre to a dark outer wing with the addition in the adults of white subterminal spots ('mirrors') in the black outer primaries (Johnstone 1982).

Although Brown-headed Gulls are widely reported to winter as far west as Arabia (e.g. Harrison 1985), until recently the only evidence for the occurrence of any gulls of this group in the Middle East was a statement by Barnes (1893) that nearly a century ago he found the Brown-headed Gull 'fairly numerous' at Aden in January, where he collected two which were larger than local Black-headed Gulls. One said to have been collected in Iraq proved to be a Common Gull *L. canus* (Melville 1988), and there were no further records until first Bundy (1986) reported a Grey-headed Gull in eastern Saudi Arabia in April 1981, and then Shirihai *et al.* (1987) a sub-adult Brown-headed Gull in southern Israel in May 1985. Four Brown-headed Gulls have since been found by Bourne (1988a) among thousands of Black-headed Gulls seen in the approaches to the Arabian Gulf in the 1987-8 winter, and three Grey-headed Gulls visited Eilat in March-May 1989 (Shirihai in prep.).

THE IDENTIFICATION PROBLEM

The normal ranges of Brown- and Grey-headed Gulls do not overlap, which may explain why the difficulty of telling them apart in their very similar immature plumages has been ignored for so long in the literature. So far it has only been considered by Hollom *et al.* (1988), who report that Brown-headed is slightly larger (43 cm compared to 40 cm for Grey-head, 38 cm for Black-head, and 43 cm for Slender-billed Gull *L. genei*) and has a rounder head with a higher forehead, a weaker bill, paler under wing-coverts, a more prominent ear-covert spot, and a wider subterminal black tail-band.

In view of the difficulty of separating the two species it seems time to reconsider the Arabian records.

Immature birds, eastern Arabia

WRPB spent the 1987–8 winter serving as medical officer on RFA *Tidespring*, principally in the approaches to the Arabian Gulf. In late November she spent a week attending a group of minesweepers about 55 km north of Qatar, and numbers of both small and large gulls were regularly seen dispersing out to sea soon after dawn to feed in flocks over fish shoals, afterwards often coming to loaf around the ship for the rest of the day. The first immature Brown-headed Gull was picked out immediately by its distinctive wing pattern (Figure 1) among about 50 Black-heads dispersing north at 26°40'N 51°26'E shortly after dawn on 25 November 1987 (Bourne 1988b), and was described at the time as 'an immature Blackhead-type gull with a mottled upperwing and a pale patch towards the tip—?Indian'.

A better view was obtained of the next as it flew up and down among about 40 Black-headed Gulls about 50 m away from the ship for several minutes at 24°44'N 57°07'E in the Gulf of Oman about 50 km off the Batinah coast on 6 January 1988 (Bourne 1989). It was described at the time (comments in parentheses added later) as slightly larger than the Black-headed Gulls with a more heavily-marked upperwing including dark borders, a central bar (on the coverts), and a paler patch towards the tip, an obscure incomplete hood (including more prominent marks behind the eye), and a (flatter forehead with a more massive) pale bill with a dark tip (it also had a prominent dark tip to the tail). It was recognised immediately afterwards as corresponding to plate 566 in Harrison (1987)—a first-winter Brown-headed Gull.

Similar birds were also picked out by their possession of dark wing-tips with a pale central patch among 13 Black-headed Gulls at 25°36'N 57°01'E in the Gulf of Oman about 65 km off Fujairah on 26 January, and among about 500 Black-headed Gulls in Port Rashid (Dubai) on 3 February (Bourne 1988c).

First-summer, Eilat

Summarising the description by Shirihai *et al.* (1987) of a Brown-headed Gull seen at the salt ponds near Eilat on the Gulf of Aqaba on 12 May 1985, it appeared larger

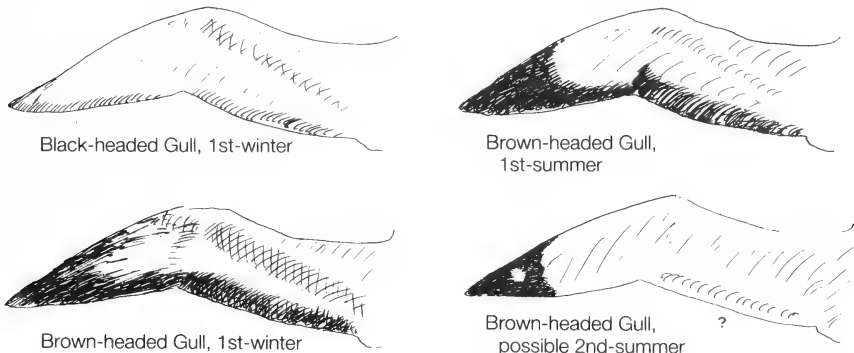


Figure 1. Upperwings of immature Brown-headed Gulls *Larus brunnicephalus* (first-summer after drawing in Shirihai *et al.* 1987, second-summer the 1981 Saudi Arabia bird) and Black-headed Gull *L. ridibundus*.

than a Black-headed Gull and closer in size to Slender-billed Gull, but shorter-legged, with a bill stouter than either, but of intermediate length and with a prominent gonys. The head was white with a dusky eye-mark and ear-spot and faint greyish markings on the crown and nape, giving the impression of a down-curved mask. The back was a slightly paler grey than in Black-headed Gull, and close in tone to Slender-billed, and the rump and underparts were white, and there was a narrow dark subterminal tail-band. When the wing was closed the primaries appeared blackish, and when it was spread (Figure 1) the black primaries and secondaries formed a broad dark trailing edge contrasting with the grey upperparts, with a faint dark bar on the coverts and a pale patch in the carpal area. The underwing was similar though the browner underside of the flight-feathers showed less contrast with the whitish under wing-coverts. The iris and orbital ring were dark, the bill orange-red with the distal third dark, and the legs dark brownish-red.

Sub-adult/adult, eastern Saudi Arabia

In view of the difficulties emerging over the identification of these gulls it now seems desirable to place on record a fuller account of the bird seen by GB at Qatif in eastern Saudi Arabia on 23 April 1981 (Bundy 1986). It was examined with a telescope in excellent light at distances down to 50 m among large numbers of Slender-billed Gulls sitting on tidal mud off the end of the jetty track by the coastguard station. At first it was resting on its tarsi in shallow water, but when the other gulls rose and flew further out onto the inaccessible mudflat it ran a short distance and took two short flights to rejoin them, preen, tuck its bill into its scapulars, and go to sleep.

It was slightly larger than adjacent Slender-billed Gulls, and longer-legged, with a deeper but shorter, rather heavy-looking bill. The forehead sloped back rather like theirs, with the peak of the crown behind the eye, although the head looked heavier. The wings extended beyond the tail when it was at rest, and looked long in flight, with blunter wing-tips. The bill had a noticeably decurved upper mandible, and both the bill and legs appeared black until seen through the telescope to be very dark red. There was a complete light grey hood with darker edges extending from the top of the hindcrown to the throat, as in a Black-headed Gull. The neck was white, shading to grey over the mantle and upperwing, which were darker than in the Slender-billed Gulls. The rump, tail, and underparts were pure white, but when it preened the bird briefly revealed a dark grey underwing.

In flight (Figure 1) it had a wing pattern like Brown-headed Gulls seen by GB shortly before in India. There was a conspicuous white area along the leading edge of the primaries, as in the Slender-billed Gulls, though it was more conspicuous because of the darker coverts. The primaries had black tips, extending in a short wedge along the leading edge, where they contrasted with the white, and there was a white spot at the tip of the wing. While it was resting on its tarsi it was thought to have some sooty edges to the secondaries, and this area may have been even darker than the wing-coverts though it was not seen well in flight.

DISCUSSION

When each of the birds discussed above was seen, most attention was paid to

Table 1. Wing lengths (mm) of three male and three female specimens of each of three gull species.

	Mean	Range
Black-headed Gull <i>Larus ridibundus</i>	306	289–319
Grey-headed Gull <i>L. cirrocephalus</i>	305	293–322
Brown-headed Gull <i>L. brunnicephalus</i>	330	324–343

distinguishing them from Black-headed Gulls. That species has a distinct wing pattern, however, and in non-breeding plumages it is much more difficult to separate Brown- and Grey-headed Gulls from each other than from Black-headed (Hollom *et al.* 1988). Indeed, on examining specimens in the British Museum (Natural History) no obvious difference in appearance was found between Brown- and Grey-headed Gulls except that the young Brown-head had more prominent brown markings and the Grey-head (at all ages) a greyer back—which would doubtless be difficult to detect without previous experience except in the unlikely event that the two species were seen together. There was not much difference in the head shape, but while East African Grey-headed Gulls were much the same size as Black-headed, the Brown-headed Gulls were larger than either of them (Table 1).

To judge by their size alone, all of the birds discussed here which were seen well were Brown-headed Gulls, since they were noticeably larger and more heavily-built than adjacent Black-headed or even Slender-billed Gulls. Those with dark upperwings seen off eastern Arabia between November 1987 and February 1988 were doubtless in first-winter plumage, and that seen attempting a misdirected first northward migration at Eilat in May 1985 in first-summer plumage, in which the dark first-year wing-coverts had either faded or been replaced with paler feathers, although it retained the other immature markings, including the juvenile flight- and

**Plate 3.** Adult or second-year Brown-headed Gulls *Larus brunnicephalus*, Bombay (India), March. Note that the head of the front bird, in moult, appears largely greyish. (M. B. Casement)

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tail-feathers.

Since the bird seen off eastern Saudi Arabia in 1981 had already developed a hood, adult wing and tail markings, and dark red bare parts by April it was presumably already in at least its second summer, though if it still had indistinct darker markings on its secondaries (which were not seen well) it may not have been fully adult. This may also explain the pale grey hood which initially caused it to be identified as a Grey-headed Gull, although, according to GB's subsequent experience of Grey-headed Gulls in South Africa, the upperparts were darker than in that species.

The large series of Brown-headed Gulls in the British Museum (Natural History) also contains several immature and moulting birds with much paler and greyer hoods than the breeding adults, though they still appear buff in the skins. A suspicion that they may look even greyer in the field has recently been confirmed by colour photographs taken by Michael Casement (1990 and pers. comm.) in Bombay harbour in February and March 1990 in which one moulting bird has a largely grey face. In view of the problems which have now emerged in the separation of Brown- and Grey-headed Gulls, and also the strong tendency for many kinds of gulls to interbreed with related species around the margins of their range, the 1981 bird can no longer be considered a definite Grey-headed Gull, and seems more likely to be a sub-adult Brown-headed Gull, or possibly even a hybrid between them.

ACKNOWLEDGEMENTS

We are grateful to Commander M. B. Casement for information about his observations on Brown-headed Gulls at Bombay, and to Duncan Brooks who encouraged and assisted us in writing up these notes.

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Observations on the breeding of Abdim's Stork *Ciconia abdimii* in Yemen

M. M. AL-SAFADI

Summary A breeding pair of Abdim's Storks *Ciconia abdimii* was studied at Wadi Surdud on the western slopes of the northern Yemen massif. Nest-building, eggs and egg-laying, incubation, and chick development and behaviour are described. Starting on 7 March the female laid five nearly spherical eggs, average size 58.5×54.6 mm, average weight 81.6 g. Four eggs hatched and three chicks reached adulthood (the young were raised in captivity from five weeks old onwards, following the death of the mother). The incubation period was 28–29 days for individual eggs. The growth rate of the chicks was 10–60% per week in the first six weeks, then 1–4% per week until the eleventh week; thereafter, weights fluctuated around 1,400 g.

ABDIM'S STORK *Ciconia abdimii* is one of the common resident birds of northern Yemen and is the only stork which breeds in the country, though two other species (Black Stork *C. nigra*, White Stork *C. ciconia*) occur regularly (Brooks *et al.* 1987). Abdim's Stork appears to occur in the Arabian peninsula as an extension of its original habitat in Africa, where it is known to perform extensive migrations and will cross large waterbodies (Brown *et al.* 1982). It is known from south-west Arabia up to 17°N (Gallagher 1986). Nesting in Arabia was first recorded by Yerbury (1896), near Aden in southern Yemen, and Montfort (1965) was the first to record nests in northern Yemen. Breeding in the extreme south-west of Saudi Arabia is thought to be probable and there have been records of birds irregularly present in the Dhofar area of southern Oman since 1978 (Gallagher 1986).

No study had previously been done on the breeding of Abdim's Stork in any part of Arabia, and the present work is thus the first of its kind—and the first of any kind to report data on the growth rates of chicks in the wild.

METHODS

Since 1980 I have made frequent visits to different areas of northern Yemen in order to study the fauna, and throughout this period careful observations were made to clarify the status and distribution of Abdim's Stork. In September 1988 a pair was observed on a nest built on the roof of a rural house in Wadi Surdud (Figure 1); according to the owner of the house, this nest had also been occupied during the previous two years. Throughout the period from February to mid-May 1989, this pair was visited once each week. During the period of egg-laying, I camped there for ten days, and another ten days were spent there during the hatching period. Observations on the behaviour of the parents and chicks were made, and records were kept of air temperature, dimensions and weight of eggs, and weight and bill length of chicks. During the fifth week after hatching the adult female died after a stone thrown by a local boy broke its wing, and as a result the weight of the chicks decreased considerably from that of the previous week. Consequently it was

deemed necessary to put the chicks under careful personal observation until fully grown, and on 14 May they were therefore transferred to an animal house (13×8 m, and 7 m high) specially built for them on the roof of the Biology Department of Sana'a University. The chicks' diet here consisted of small pieces of beef, fish, and live toads twice a day, at 08.00–09.00 hrs and 15.00–16.00 hrs.



Plate 1. Adult Abdim's Stork *Ciconia abdimii*, Magaluf, northern Yemen, April. (R. F. Porter)

DISTRIBUTION

Birds were found mainly in the coastal lowlands (the Tihamah), up to 1,200 m above sea-level, in cultivated wadis where the species' favourite food of fish, toads, frogs, and insects (see below) is more abundant. No birds were seen on the coast or in the highlands (Figure 1). In spring and summer birds aggregate at their breeding sites in the Tihamah villages. Abdim's Stork has formerly been considered to be a summer visitor to northern Yemen (Brooks *et al.* 1987), but, though some may leave the country after breeding, others are to be found in autumn and winter scattered in the cultivated areas of the Tihamah as a whole, and a few occur near the rubbish dumps of Tihamah towns such as 'Al-Garahy, Zabid, Al-Kadan, and Al-Tur.

BREEDING SEASON

From field observations in various regions of northern Yemen it was concluded that the breeding season of Abdim's Stork begins in February or March when the birds form pairs and build nests on trees and on top of thatched houses beside or near wadis. The breeding season seemed to coincide with a much improved food supply—the numbers of fish, frogs, toads, and grasshoppers increased remarkably in these months.

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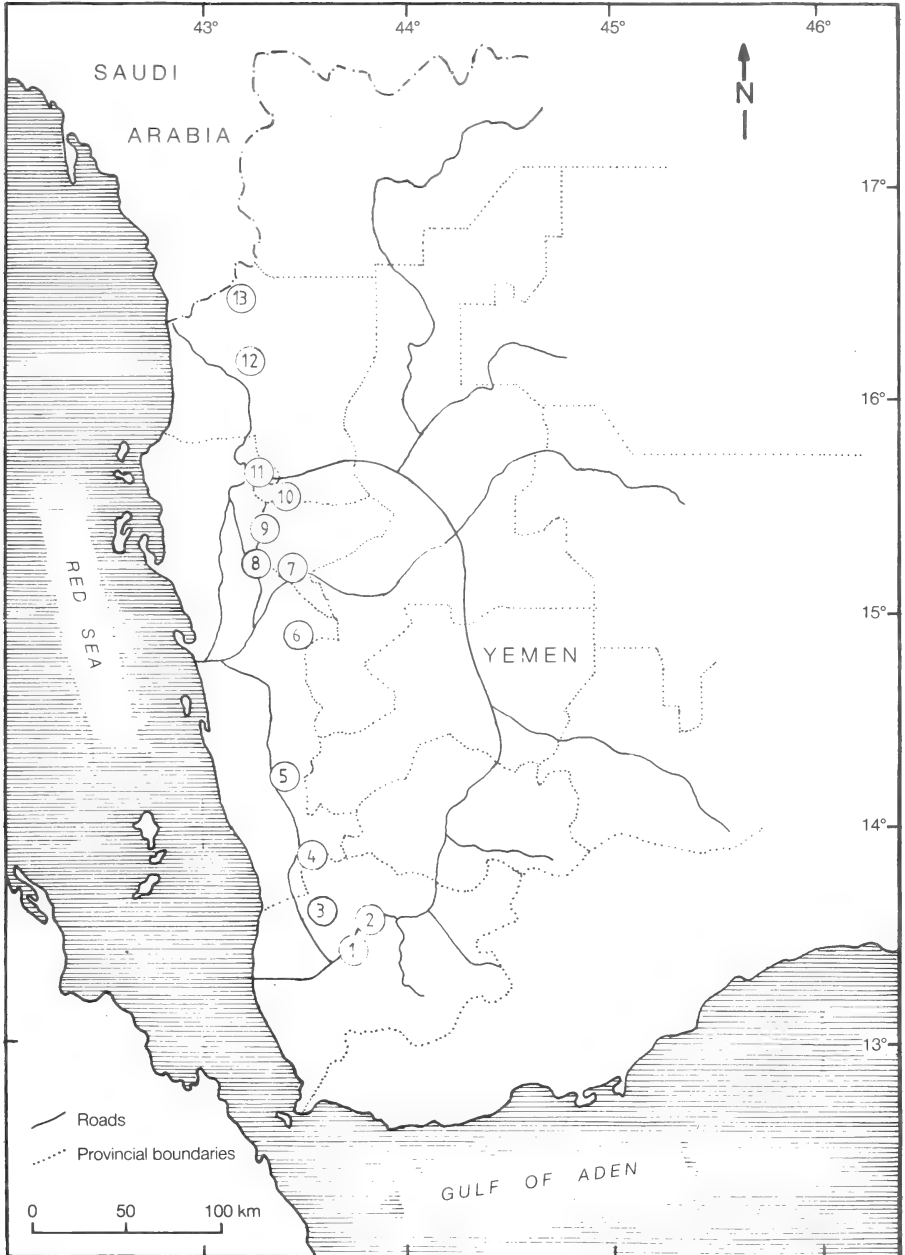


Figure 1. Records of Abdim's Stork *Ciconia abdimii* in northern Yemen from the present survey, 6–21 July 1989 (breeding sites in italics): 1 Wadi Al-Barh, 2 Wadi Qutin, 3 *Wadi Rissian*, 4 Wadi Nakhlah, 5 *Wadi Zabiā*, 6 *Wadi Siham*, 7 *Wadi Surdud*, 8 *Wadi Qualaiah*, 9 *Wadi Hatab*, 10 *Wadi La'ah*, 11 *Wadi Mur*, 12 *Wadi Hiran*, 13 *Wadi Soliman*.

NEST-BUILDING

In February the study pair began to repair a nest of the previous year by adding new dried and fresh sticks. At long intervals each partner returned holding a single stick 30–60 cm long and 5–16 mm thick. The outer diameter of the nest was about 100 cm and the inner about 35–40 cm. The depth of the outer part of the nest was about 17 cm. The nest was lined with a thin layer of coarse grasses. Material continued to be added to the nest up to and beyond egg-laying.

EGGS AND EGG-LAYING

The female laid five eggs, the first on 7 March, the second on 8 March, and the third on 10 March. Until the evening of 11 March there were only three eggs in the nest, but by the early morning of the next day a further two had been laid. The five eggs were rather spherical and chalky-white in colour. They were labelled consecutively and their dimensions and weights are given in Table 1: the first egg was the largest and the last two the smallest.

Table 1. Dimensions (mm) and weight (g) of the five eggs of a clutch of Abdim's Stork *Ciconia abdimii*, northern Yemen.

Egg	Diameter		Weight
	major	minor	
1	61.0	57.0	85
2	60.3	56.3	84
3	59.5	55.5	83
4–5	58.0	54.0	81
	53.8	50.3	75
Average	58.5	54.6	81.6

INCUBATION

One parent was always present at the nest from the start of laying, and incubation was almost continuous after the third egg was laid. Instead of incubating, however, the parent often stood on the nest, moving with the sun in order to shade the eggs from its direct heat. Shading and incubation was exchanged successively by the two adults. The incubation period of the first three eggs was 28 days and of the fourth or fifth 29 days; the remaining egg did not hatch. Immediately after hatching, the parents carried the eggshells away from the nest and discarded them on the ground, and on 12 April, two days after the last egg hatched, the parents removed the unhatched egg from the nest, dropping it on the ground. On examining its scattered contents, putrefaction was noted, with no indication of chick development, so the egg was presumably infertile.

DEVELOPMENT OF THE YOUNG

The chicks are semi-altricial and nidicolous. The growth in weight and bill length is shown in Table 2 and Figures 2–3.

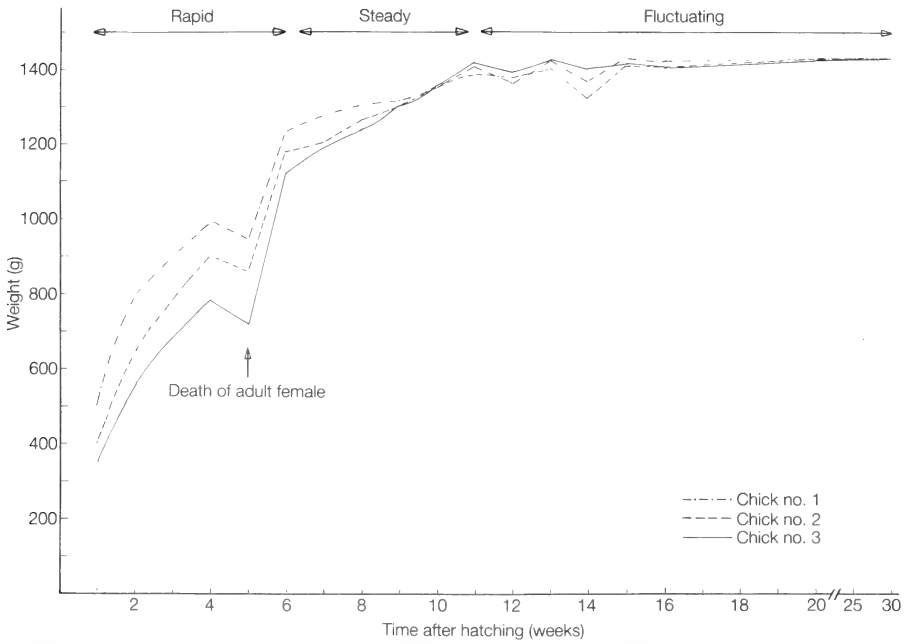


Figure 2. Changes in weight of young Abdim's Storks *Ciconia abdimii*, northern Yemen. Note the drop during the fifth week on the death of the adult female (the young were transferred to captivity thereafter).

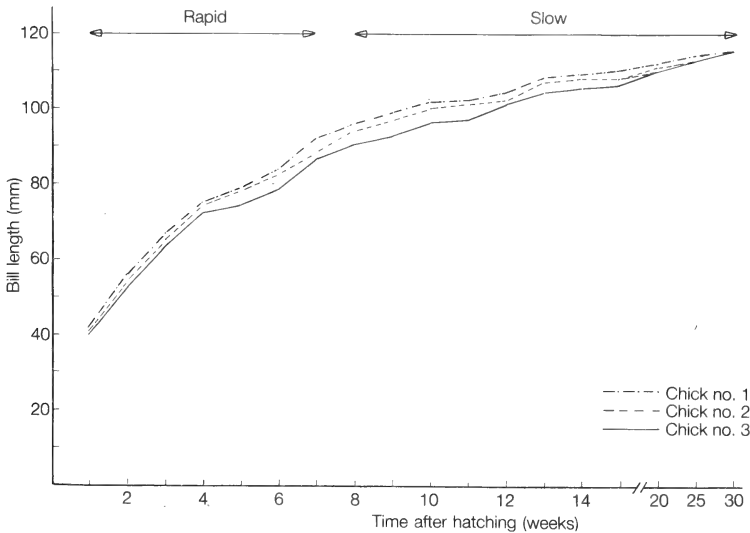


Figure 3. Growth of bill length of young Abdim's Storks *Ciconia abdimii*, northern Yemen.

Table 2. Weight (g) and bill length (mm) of three young Abdim's Storks *Ciconia abdimii* from week 1 (14 April) to week 35 (7 December), northern Yemen. Bill length is measured from tip to inner margin of mouth.

	Week	1	2	3	4	5	6	7	8	9	10
Weight	1	500	801	901	991	940	1230	1275	1300	1320	1350
	2	400	642	780	900	860	1175	1200	1250	1300	1360
	3	350	563	665	780	720	1120	1190	1235	1300	1350
Bill length	1	42	56	67	75	79	84	92	96	99	101
	2	41	54	65	74	78	82	88	94	97	100
	3	40	52	64	72	74	78	86	90	92	95

	Week	11	12	13	14	15	16	20	25	30	35
Weight	1	1400	1360	1420	1370	1430	1420	1430	1430	1430	1429
	2	1390	1370	1400	1321	1405	1410	1420	1421	1425	1430
	3	1410	1390	1420	1400	1410	1410	1400	1435	1426	1428
Bill length	1	102	104	108	109	110	110	112	114	115	115
	2	101	102	106	107	108	109	111	113	115	115
	3	96	101	104	105	107	108	110	113	115	115

First week

The chicks' eyes were open immediately after hatching and they seemed to be able to focus on moving objects. At hatching the chicks were thinly covered in dark down feathers and the skin was blue-grey; the legs and feet were dark green to blue-grey and the facial skin was black as was the bill except for an orange tip. On the 2nd-3rd day white down feathers began to emerge on the back of the head, and by the 5th-6th day the rest of the body was taking on a whiter colour.



Plate 2. Young Abdim's Storks *Ciconia abdimii* during first week of life, Wadi Surdud, northern Yemen, April. Note crouching in presence of observer. (M. M. Al-Safadi)



Plate 3. Abdim's Stork *Ciconia abdimii* shading young, Wadi Surdud, northern Yemen, April. (M. M. Al-Safadi)

The chicks were clumsy at first, though able to move within the nest. On the 2nd–3rd day they tried to raise themselves on their tarsi and by one week they could balance on their tarsi, sit in a vertical position, and were quite capable of moving about the nest. Throughout the day, they were fed at intervals by both parents, using partial regurgitation—at first direct into the chicks' throat, then onto the floor of the south side of the nest. The food consisted of small pieces of toads, frogs, and fish. Competition between chicks occurred at times of feeding.

One adult was always present on guard and to shade the chicks from the direct sun, and it was also apparent that the other parent did not fly far from the nest and kept it under observation. The parents also brought water daily which they regurgitated over the chicks to reduce their temperature. The chicks forcibly expelled their semi-liquid faeces over the sides of the nest, though avoiding the side where food was delivered. At the end of the first week, when the chicks were faced with a novel situation, such as the approach of a stranger, they responded by crouching with their heads withdrawn and laid on the floor of the nest.

Second week

The chicks' white down feathers were now longer and denser and the first signs of developing black feathers on the wings were visible. They were able to stand erect and to walk clumsily and grab the adult's bill to encourage feeding. The parents' behaviour (feeding, guarding, shading, water-cooling) continued as in the first week, as did the chicks' method of defecation and reaction to intruders. On day five of the second week the smallest chick died and was removed by the parents from the nest.

Third week

By the third week of age the glossy black feathers on the head and wings were longer and denser, and the first signs of whitish-yellow under tail-coverts were apparent. The bare skin on cheeks, lores, forehead, and eyelids became bluish and the chin acquired a bluish-yellow colour. The parents left the young without guarding them from the middle of the third week, and the chicks bill-clattered rapidly on the return of an adult, grasping its bill to encourage feeding. On the approach of a human they tried to stand, moved backwards, bill-clattered rapidly several times, and struck out with their bills.

Fourth week

The chin acquired a crimson colour and the black tail-feathers appeared. The chicks would preen each other and also spread their wings for sunning. The reaction to an intruder continued as before, but in addition the feathers of the head and back were raised. Their bills became very effective weapons and drew blood from the observer's hands.

Fifth week

By this time the young were almost completely feathered, with plumage similar to the adults although somewhat duller and lacking the adults' brightly coloured facial skin. As described above, on day two of the fifth week the mother died, and



Plate 4. Young Abdim's Storks *Ciconia abdimii* during fourth week of life, Wadi Surdud, northern Yemen, May. In presence of observer chicks now retreat, try to stand, and ruffle head and back feathers. (M. M. Al-Safadi)

consequently the weights of the young dropped to less than those of the previous week (Table 2 and Figure 2); the young were then taken into captivity and moved to Sana'a.

Sixth week

The plumage was more or less similar to the adults, but the black neck feathers were not fully grown and the tail length was about 13 cm. The chicks were able to move clumsily for a few metres and to peck very hard.

Seventh week

The plumage was similar to the adults and the legs began to develop orange-pink spots on the bare skin of the tibia and tarsus. The bare forehead-patch became distinctly bluish-green. The birds tried to fly, and were able to flap up to 1 m above the ground.

Eighth week

The forehead-patch began to acquire a reddish colour. The birds tried to fly several times per day, and were able to reach 4–5 m above the floor.

Ninth week

The legs developed more pink patches. The birds were able to fly well, leaving their house and returning.

Tenth week

The pink blotches on the legs became concentrated near the tibio-tarsal joint. The bill became greyish-green with a reddish colour at the base.

Eleventh week

The white feathers of the lower breast and belly gained some of the adult's yellow-orange wash. The bare skin of lores and cheeks was grey-blue. The pink colour of the tibio-tarsal joint and feet became more distinct.

Subsequent development

The appearance of the plumage and bare parts gradually approached that of an adult until by the 18th week of age the juveniles acquired full adult appearance. Moulting and replacement of the black neck feathers began in the 23rd week, and the reddish-orange colour around the nostrils was noted in the 31st week.

DISCUSSION

In the study pair, egg-laying started in early March, a period with a daily maximum air temperature of 37–39°C, and it appears that in northern Yemen as a whole laying is usually in March or April. Gallagher (1986) reported a bird incubating in mid-May in southern Yemen. At Lake Shala in Ethiopia, Kahl (1971a) found breeding in April, coinciding with the period of peak food availability, and qualitative observations in the present study indicate a similar synchronisation. Laying occurs from January to March in western Kenya but usually in May, at the height of the early rains, in the main part of the African range (Brown *et al.* 1982).

The breeding behaviour of the study pair was almost identical with that described by Kahl (1971a, b) in Ethiopia. The female in the present study usually laid her eggs at night or in the early morning, and this seems to be a general character of storks (Kahl 1971a). Kahl (1971a) found that the common clutch size is three, five (as in the present study) being a rare event—as it is also in the Black Stork (Cramp and Simmons 1977). The chalky-white colour of the eggs in the Yemen study nest was retained throughout the incubation period, though Kahl (1971a) found that eggs became soiled and stained shortly after laying.

Although both the size and weight of the five eggs laid decreased steadily from the first to the last, it is notable that the ratio between the major and minor diameters in all eggs was almost constant at 1.07. The eggs were thus substantially more spherical than those reported by Schönwetter (1967) (58.3 × 42.5 mm) and Kahl (1971a) (60.4 × 43.1 mm). The incubation period of 28–29 days for individual eggs is comparable with that recorded by Farnell and Shannon (1987) for the species in captivity (28–30 days).

Of the four hatched eggs only three survived to adulthood, the death of the fourth chick, which was also the smallest, being most probably due to its inability to compete for food with its large and well developed siblings. Cramp and Simmons (1977) gave average productivities of 3.4 young per pair for Black Storks and 2.8 for White Storks.

Farnell and Shannon (1987) reported the hatching weight of two captive-bred chicks as 37 and 38 g. There are no directly comparable figures available from the present study, but the weight of the Yemen eggs immediately before hatching was 75–85 g. The weight of the Yemen chicks one week after hatching was 350–500 g which is much greater than that given by Farnell and Shannon (1987) for two

six-day-old captive-bred chicks (119 and 140 g).

The growth period of the young may be divided into three stages (Figure 2). In the first six weeks growth was very rapid, varying from 10% to 60% per week (except for the fifth week, when the mother died). From the seventh to the eleventh week the rate of growth, though steady, decreased greatly to 1–4% per week. In the third stage, beginning from the twelfth week, the rate of growth fluctuated within narrow limits. These stages are comparable with data given by Farnell and Shannon (1987) for birds reared in captivity. Bill growth (Table 2 and Figure 3) was rapid in the first seven weeks, followed by a longer period of slower increase in length.

The chicks were ringed and eventually released in Wadi Surdud on 5 January 1990, and on the following 4 August one was observed within a large colony of about 56 Abdim's Storks at Shaikh Ali Salim Dab village in Wadi Zabid. With luck, further observations of these birds may allow the age of sexual maturity to be determined, as this is presently unknown.

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NOTES

First breeding records of Verreaux's Eagle *Aquila verreauxii* in Saudi Arabia

XAVIER EICHACKER

VERREAUX'S EAGLE *Aquila verreauxii* is a mainly Afrotropical species, with a range extending through southern and eastern Africa to northern Ethiopia and south-east Egypt (Brown and Amadon 1968; Goodman and Meininger 1989). Elsewhere, there are breeding records in northern Yemen (Thiollay and Duhautois 1976; Cornwallis and Porter 1982; Brooks *et al.* 1987) and Oman (Gallagher and Rogers 1980) and also some sightings and one published breeding attempt in eastern Sinai (Hovel 1987; Paz 1987). A pair has been seen in north-east Saudi Arabia (Jennings *et al.* 1990) and birds are seen rarely in the Asir mountains of the south-west (Jennings 1981), but breeding in the country has not previously been proved.

On 12 March 1989, in Wadi Turhaba (20°28'N 41°14'E) in the Hijaz mountains of south-west Saudi Arabia, P. Gaucher and I observed an adult Verreaux's Eagle soaring and stooping close to a cliff and chasing five Griffon Vultures *Gyps fulvus*. A few seconds later it landed on the cliff and started to call loudly. Because of all



Plate 1. Verreaux's Eagles *Aquila verreauxii* (presumed female on left) at nest with young, Wadi Turhaba (Saudi Arabia), April 1989. (Xavier Eichacker)

this behaviour, we suspected it to be a territorial bird.

On 18 March I returned to the location to verify our assumptions and observed two flying birds, one bringing branches to a nest on the cliff oriented south-south-east, 300 m above the wadi bed. The nest was at an altitude of 1,700 m. On 7 April I climbed just in front of the nest and discovered a five-week old chick (aged using data in Steyn 1985). Given an incubation period of 44–46 days (Brown and Amadon 1968), laying must have been around 25 January. Cornwallis and Porter (1982) calculated a laying date in northern Yemen of about 5 January.

The larger of the two adults, presumed to be the female, still showed some brown immature covert feathers, meaning that it was probably more than three years old but less than five (Steyn 1985). The male was in full adult plumage. We watched a hyrax *Procavia capensis* being brought to the nest, and these are probably the main prey—we found six further skulls close to the nest and hyraxes are very common in the wadi.

In spring 1990 I was able to prove breeding at a second site in south-west Saudi Arabia: one juvenile fledged from a nest at 19°56'N 41°28'E near Al Baha.

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A record of Banded Martin *Riparia cincta* from Egypt

ANDY CLEMENTS

FROM DAWN on 15 November 1988 I was birding alone on Elephantine Island in the Nile at Aswan in Upper Egypt. I was in a small area of fields and bushes at the northern end of the island which attracts migrants. At about 07.30 hrs I began watching a party of approximately 25 hirundines hawking insects above a bund separating the fields from the western shore of the island. Virtually all the birds were Swallows *Hirundo rustica*, a mixture of the nominate race and *H. r. savignii* giving a good opportunity for comparison. At first the only other individual was a single Pale Crag Martin *Ptyonoprogne fuligula obsoleta*.

After a few minutes I saw another bird approaching the flock from the north-west, and thinking it was further away than was actually the case I mistook it at first for an Alpine Swift *Apus melba*. However, I soon realised this was incorrect when it joined the flock. The bird was clearly a hirundine, but large, chunky, and with a stiff-winged flight, noticeably larger and bulkier than Pale Crag Martin. From below I could see well-defined areas of light and dark plumage. The whole of the upperparts were dark sandy-brown. The underside of the flight-feathers was a very dark brown, and a broad clearly defined sandy-brown band crossed the upper breast. The chin and lower breast to vent were bright white with clearly defined white under wing-coverts. The underside of the tail was dark brown. The stiff flight action and broad-based triangular wings gave a heavy-shouldered appearance, with prolonged gliding rather than the buoyant flapping flight of Swallow. The tail appeared almost square-ended when spread. The bird was seen quite well for about six minutes, but mainly from below and I did not notice any supercilium. Eventually it moved away, together with the whole flock, east across the Nile and I finally lost sight of it still moving south and east above the town of Aswan.

I recognised the species as one I had seen before, in East Africa, but could not put a name to it immediately. Back in Aswan, however, after reference to Hollom *et al.* (1988), I was able to identify the bird as a Banded Martin *Riparia cincta*, an Afrotropical species inhabiting the north-east, east, and southern third of the continent. It is an intra-African migrant, occurring also as a non-breeding visitor to West Africa (Mackworth-Praed and Grant 1960, 1963, 1973; Hall and Moreau 1970). There are four recognised subspecies, with the most northerly, *R. c. erlangeri*, reaching Eritrea and the Sudan.

In March 1982 the species was recorded for the first time in the Middle East—in northern Yemen, by Cornwallis and Porter (1982)—but it has never before been recorded in the west Palearctic.

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