

On the Breeding Birds of Bahrain

by

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Introduction

Of over 240 species of birds recorded on the islands of Bahrain, Arabian (Persian) Gulf, only 23 are known to breed on the islands and only 15 of these are present throughout the year. Only five breeding species have been reliably reported previously, and as the literature is scant and occasionally misleading the present known position is summarised here. No thorough study of the breeding ecology of the species on Bahrain has been attempted, but this note is offered as a contribution to future studies.

Recent Ornithological history

Mention of Bahrain's avifauna in the literature is mostly as the result of brief visits by observers. Visitors have included F. Gillet, who collected three specimens on 17th March 1896, (now in the British Museum Natural History); Major R. E. Cheesman in March and April 1921 and November 1923 (Cheesman 1923, Ticehurst and Cheesman 1925, Cheesman 1926); J. Fernandez, who collected a few specimens in 1926 (Bates 1940); A. C. Trott in autumn 1940 (Trott 1947); and S. Dillon Ripley, 28—29 July 1950 (Ripley 1951). Colonel R. Meinertzhagen called at Bahrain in February 1914 and 18—28 January 1951, after which he went to neighbouring eastern Saudi Arabia (Meinertzhagen 1954; Dr. T. R. Clay in pers. comm. to MDG); Meinertzhagen comments on a further 24 species, but some cannot be from personal observation. Later visitors included E. A. Chapman on six occasions between October 1952 and June 1953 (Chapman and McGeogh 1956, Chapman in pers. comm.). J. P. Paige visited briefly in January and March 1958 (Paige 1960). Records from eastern Saudi Arabia which are relevant to Bahrain are in Ticehurst and Cheesman (1925), Ripley (1951) and Eddy (1962).

A short summary of Bahrain birds (Belgrave 1968) is based upon Meinertzhagen (1954), but is embellished with other, largely uncorroborated, reports. A check list (Strickland and Gallagher 1969) was superseded by that of Rogers and Gallagher (1973), based mainly upon their own obser-

vations but supported by the work of others in an active group of bird-watchers during the period 1966—71 (Gallagher 1969—71). Gallagher spent April 1974 on Bahrain and Howar islands and the present paper includes records up to that date. Sub-specific identification is based upon the literature and upon specimens presented to the British Museum (Natural History) London and the Harrison Zoological Museum, Sevenoaks, Kent. It should be emphasised that most observations are from the northern half of Bahrain Island and from Muharraq and Sitra islands.

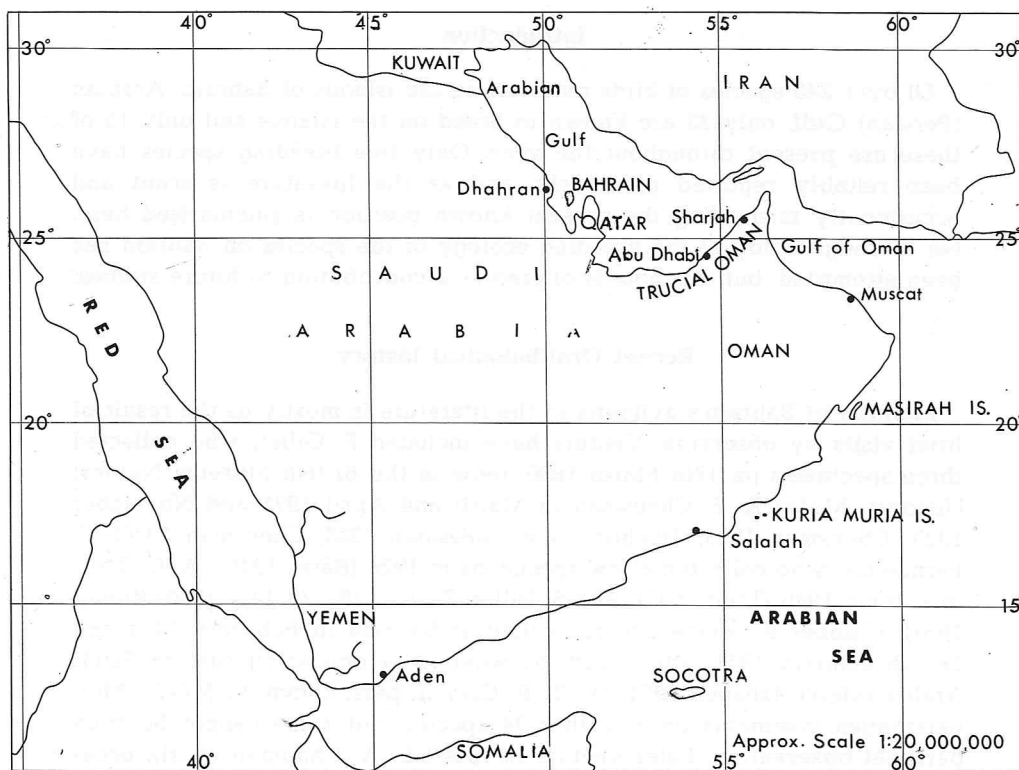


Fig1 ARABIA

Fig. 1: Arabia

Description of Bahrain

The independent Emirate of Bahrain (see Map, Figs. 1, 2,) is an archipelago of about 30 small desert islands set in a 'V' shaped bight midway along the Arabian shore of the Arabian (Persian) Gulf, with the peninsula of

Qatar 32 km to the east of Bahrain Island (the largest of the group), the shores of Saudi Arabia about 32 km to the west, and Iran 100 km to the north. It lies on the conjunction of the Palaearctic and oriental zoogeographic regions and its close proximity to the mainland of Arabia justifies its inclusion here as part of Arabia.

Bahrain Island, 48 km long from north to south and 16 km at its broadest, is a dome of Eocene limestone the central part of which has slumped and eroded into several dusty depressions rimmed by low hills and cliffs up to 30 m high. Jebel al Dukhan, at 186 m the highest remaining part of the original dome, stands near the centre of the islands at 26°02'N. 50°32'E. The stony flanks of the dome slope outwards and downwards to more recent limestones and to peripheral extensions of *sabkha* (salt flats), raised beaches and some small dunes.

Subsidiary islands include Muharraq, Nabi Salih, Sitra and the Howar group on the east side, and the Umm Nasan on the west. With the exception of the first three, which have villages and cultivation, the rest are mostly uninhabited rock and sand desert.

Cultivation is limited, by the availability of water suitable for irrigation, to the Northern Peripheral Zone (Good 1954, 1955; Wiltshire 1964), which stretches in a narrow arc from Zallaq on the west coast to Sitra on the east. The rest of the island is sand, stone and rock desert, with a variable sprinkling of vegetation, mostly xerophytic or sub-halophytic in character, but supplemented by ephemerals after good rain. In periods of drought the vegetation becomes impoverished, but the effects of good rain are long-lasting.

The climate is very hot and humid from June to September and cool or cold from December to February; the intervening months are pleasant. Rain falls mostly in winter and spring, but this is irregular in timing, amount and distribution; several years of drought are common. The prevailing wind is from the north-west and is often strong (the *Shimaal*), particularly in winter and spring, but there are occasional short periods of southerly winds (*khaus*). Except during a *shimaal* there are variations in surface wind direction during day and night. The upper wind structure is complex and its effects upon migrants difficult to assess. With the *shimaal* there is usually a flow from between north west and north up to 5 000 ft (1 524 m); between 2 and 3 000 ft (610—914 m) it is approximately twice as strong as the surface wind. Above 5 000 ft (1 524 m) the winds are westerly and strong, but in summer are lighter and often easterly.

The greatest single factor affecting the breeding of land birds in this sub-tropical desert environment is water. Good rains, which encourage widespread vegetation and its associated invertebrates, also encourage

breeding, as in a Hoopoe in March 1969; conversely, drought can be expected to deter some birds from breeding. During recent years the flow of fresh water from subterranean springs into ditches or ponds has dwindled or become progressively saline; this has been caused by a lowering of the water table, which has led to the dereliction of many acres of date garden and other cultivation. This loss of habitat has been met only in part by an increase in the number of small gardens around habitation.

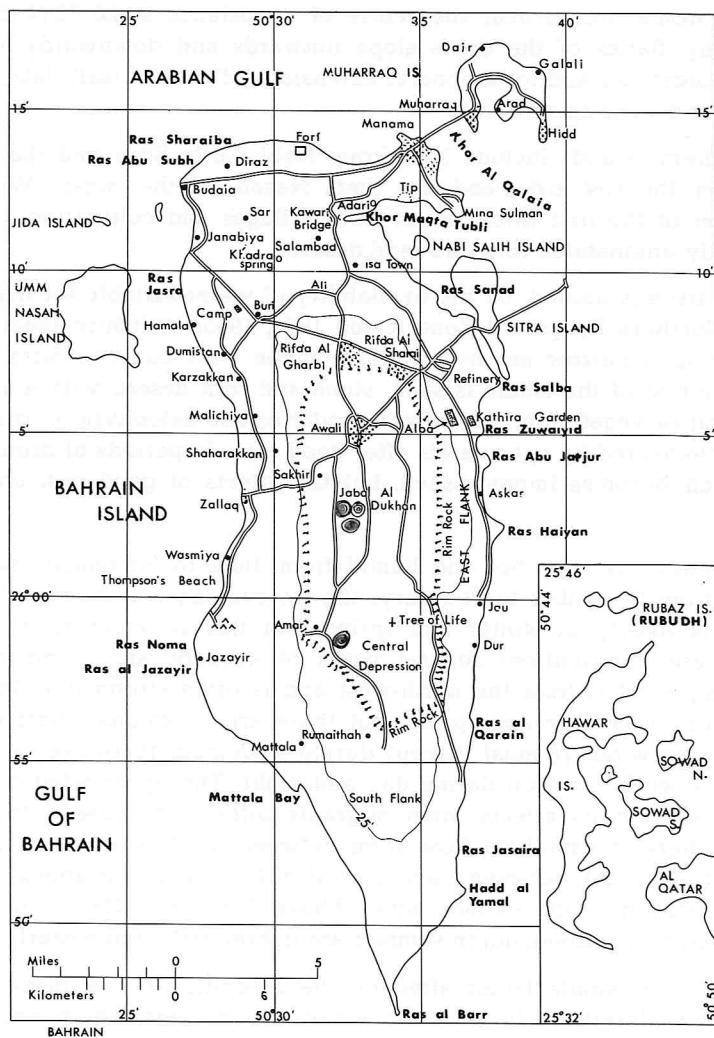


Fig. 2: Bahrain Islands

Perhaps the greatest pressure upon the countryside and on Bahrain's limited fauna is caused by spreading urbanisation, industrialisation and expanding population (216 000 in April 1971, over 250 000 by 1976) with its rising standard of living, sophistication and mobility, (see also Brunnsden, Doornkamp and Jones). However, entry to all the subsidiary islands except Muharraq and Sitra, and to the southern, desert, half of Bahrain Island has long been restricted by the Emir, except to fihermen (who tend to persecute fisheating birds). Furthermore, it is pleasing to note that the need for further measures for the protection and conservation of Bahrain's wildlife heritage is well understood by the authorities.

The principal habitats in 1969—71 were:

- A. The mangrove swamp, streams and marsh near the village of Bu Ashira, just south of Manama, the capital, an area mostly of calcareous mud and the dwarf mangrove *Avicennia marina*, but also some *Phragmites communis* and *Juncus* sp. A huge municipal rubbish tip is inexorably extinguishing this excellent habitat.
- B. Cultivation, especially in or near date gardens.
- C. Brackish reed beds near Janabya village on the west coast, fed by waste irrigation water.
- D. Jebel al Dukhan, with an occasionally overflowing water tank resulting in rough vegetation; other rocky outcrops and cliffs.
- E. Sheltered bays, mud flats and sand spits, particularly on Muharraq Island, at Ras Zuwayid on the east coast, near Mattalah to the south west, and on some other coasts.
- F. Sandy or stony desert and its rough vegetation.

The 23 breeding species reported here occur primarily in the following habitats:

A to C	Good vegetation or near habitation	10 species
E	Near shores	7 "
F	Desert	5 "
—	Various	1 "

The breeding birds

Confirmed breeding

Details of the 23 species now proved to breed in Bahrain are given in the systematic list. Of these, two have only been reported breeding once: Moorhen *Gallinula chloropus* and Hoopoe *Upupa epops*. Two appear not

to have been reported previously to breed in Arabia: Turtle Dove *Streptopelia turtur* and Olivaceous Warbler *Hippolais pallida*.

Of the total, five were mentioned in the literature as breeding or possibly breeding: Saunders' Little Tern *Sterna saundersi* ("possibly breeds at the south end of Bahrain Island", Meinertzhagen 1954: 525); Barn Owl *Tyto alba* ("several pairs are resident ... and an old nest was found", Ticehurst and Cheesman 1925: 24); Swallow *Hirundo rustica* ("Common ... and about to breed", Ticehurst and Cheesman 1925: 19); Brown-necked Raven *Corvus ruficollis* ("nesting regularly" Belgrave 1968, under *C. corax*); Rufous Bush Chat *Cercotrichas galactotes* ("nest building and singing", Ripley 1951: 9). Breeding can be inferred from the mention (in Ticehurst and Cheesman 1925, Ripley 1951) of another five species as present on dates during which they are now known to breed, though no suggestion was then made that they did so.

Possible breeding

In addition to the list of 23 species proved to breed, there are interesting reports which indicate that others possibly breed regularly or occasionally, or which bred formerly.

J. H. Clingly found and photographed a fresh egg of a gull or tern on a decorated scrape on a sand spit on Muhazwara Island, Howar group, on 14 April 1975, which cannot be identified with certainty but was probably of the Caspian Tern *Hydroprogne tschegrava*. "At least as long as an Osprey's, but slimmer; colour a vague yellowish-blue-white, speckled indiscriminately; possibly of a large gull" (in pers. comm.). The black and white photograph shows the egg in a shallow depression little larger than the egg itself, surrounded by an untidy loose collection of plant and bone fragments. Mr. Clingly has seen many eggs in the Osprey nests on Howar, and his assessment of the size would exclude all gulls and terns known to occur locally except Great Black-headed Gull *Larus ichthyaetus* and Caspian Tern. The former occurs at Bahrain on passage and in winter, but is not reliably recorded breeding nearer than the latitude of the Caspian Sea. The latter species is known to nest at the head of the Gulf (Ticehurst 1926, Dr D. A. Scott in per. comm.), on some Gulf islands e. g. on Khubar Island (V. A. D. Sales 1965) and off the Makran coast (Salim Ali and Ripley 1969), so that breeding more widely along the Gulf may be reasonably assumed (as by Vaurie 1965, Salim Ali and Ripley 1969 and others, though apparently without published evidence). Dr C. J. O. Harrison (in pers. comm.) confirms that from the markings of the egg in the photograph it appears to resemble eggs of the Caspian Tern in the British Museum (Natural History) collection.

There are old reports of nesting bee-eaters *Merops* species, and possibly of the European Kingfisher *Alcedo atthis*. Belgrave (1968) says that the

Little Green Bee-eater *M. orientalis* is "native to Bahrain", but there is no certain record even of its occurrence. Mohammed Atytallah (verbally to Gallagher) has told of a colourful bird which once nested in the ground in his garden, which could be the European Bee-eater *M. apiaster* or the Blue-cheeked Bee-eater *M. superciliosus*, both of which are recorded as nesting in parts of Oman (in Warr 1976).

W. G. Anderson has told the authors of an Arab report of the breeding of a possible European Kingfisher: "A small blue bird with a red beak, which perches on branches and eats fish, used to live in the banks of irrigation ditches in the date gardens. Nests dug out from the end of a tunnel contained many small white eggs. There used to be many of these birds 10 to 20 years ago". The species is now a winter visitor to Bahrain, but over most of Iran it is also a common resident (D. A. Scott in pers. comm.) and it could have bred on Bahrain before the decline in the flow from subterranean springs presumably reduced the suitable habitat.

Other species which may be expected to breed within the Emirate include the Lesser Crested Tern *Sterna bengalensis arabica*, which breeds on Gulf islands; Pallid Swift *Apus pallidus*, present in places in Bahrain during summer and breeding locally in eastern Arabia (T. Hallam, in pers. comm., reports this species almost certainly nesting in a rock face on Bahrain near West Rifa'a during 1976); Short-toed Lark *Colandrella cinerea*, seen in song flight in July; and House Crow *Corvus splendens*, a pair exhibiting territorial behaviour in a Manama date garden in April 1971. In some years, especially after good rainfall, it is possible that other species may breed.

Unconfirmed reports

Several species which it has been suggested breed on Bahrain appear not to do so. The Greater Flamingo *Phoenicopterus ruber* was said by an Arab shooter to nest on Howar (Rogers and Gallagher 1973), but though a few remain from larger wintering groups there is no evidence of nesting. The Cream-coloured Courser *Cursorius cursor* was thought to be a breeding resident (Strickland, in Strickland and Gallagher 1969), but though adults and birds of the year were once seen as early as 12 May these appear to have been migrants, and none bred on Bahrain between 1969—71. Meinertzhagen (1954: 538) states of the Slender-billed Gull *Larus genei* that "a large colony breeds at the southern tip of Bahrain Island", but it does not do so now, and as he did not visit in the breeding season it seems that it was misidentified to him (see under White-cheeked Tern *Sterna repressa* in the Systematic List).

There has been no evidence or further suggestion that sandgrouse *Pterocles* spp. breed, as was thought by Ripley (1951) that they may.

Meinertzhagen (1954: 251) thought that there is "little doubt" that the Mourning Wheatear *Oenanthe lugens persica* breeds at the south end of Bahrain Island, but it appears to be only a winter visitor in small but variable numbers between 3rd October and 4th March, though often in sub-song and presumed pairs. One specimen of the Hooded Wheatear *Oenanthe monacha* was secured on Bahrain on 26th March 1921 (Ticehurst and Cheesman 1925: 19) where it is said that the status is unknown but "no doubt resident where it occurs", leading Meinertzhagen (1954) to include Bahrain in its distribution; however, it has been found only as a scarce visitor between 25th October and March, though reported in song or sub-song once on 24th January 1968.

Acknowledgements

We are very grateful to the members of the group of Gulf Birdwatchers and others who have offered their records for inclusion in the Bahrain Record, commenced by Mr J. P. Jackson in 1968, from which we have been able to draw; in particular to W. G. Anderson, Mohammed Atyattallah, J. H. Clingly, K. J. Fisher, the late C. I. Griffiths, Major W. A. C. Griffiths, Mohammed Jafari, M. C. Jennings, Colonel T. D. Lewis, M. J. Strickland and Mrs C. Stroud. Major Gallagher also wishes to thank H. E. Sheikh Khalifa bin Sulman Al-Khalifa for authorising his stay on Howar Island for eight days in April 1974; the late Ann Khalifa for assistance, John Clingly for hospitality and General Sir Rowland Gibbs for support. Our grateful thanks are also due to the late Dr James M. Harrison, and to G. S. Cowles and D. Goodwin of the British Museum (Natural History) for identification of specimens and helpful comment, to Mrs F. E. Warr for suggesting improvements to an earlier draft, to J. George for information on the upper wind structure, to Miss J. Gallagher for typing, and to others mentioned in the text. We wish to express our gratitude to the Emir H. H. Sheikh Isa bin Sulman Al-Khalifa K. C. M. G., and the people of Bahrain, for the facilities accorded to us to study birds on their islands.

Systematic list

This list includes all species known to nest within the Emirate of Bahrain.

Res = resident. PM = passage migrant.

SV = summer breeding visitor. WV = winter visitor.

* = specimens from Bahrain in the British Museum (Natural History) (BM[NH]) or Harrison Zoological Museum (HZM), Sevenoaks, Kent. Names of contributors (when indicated by initials) are given under 'Acknowledgements'. The order and nomenclature generally follow Vaurie (1959, 1965).

* **Socotra Cormorant** *Phalacrocorax nigrogularis*. Resident, partial migrant. Nests on Rubudh Id., but probably on others of the Howar group (old eggs, dead squabs and over 2 000 old nest scrapes in groups were discovered in April 1974 by MDG and JHC). Breeds in the Gulf November to June.

The report that "cormorants occasionally nest in trees in Bahrain" (Belgrave 1968: 83) has not been verified; *P. nigrogularis* is not a tree-nester and *P. carbo sinensis*, which is, occurs almost exclusively as a winter visitor.

Reef Heron *Egretta gularis schistacea*. Resident and PM. Occupied nests with eggs were found on beach scrub on the Howar islands, April 1973, 1974 and 1975 (JHC and MDG).

*** Osprey** *Pandion haliaetus haliaetus*. Resident, PM and WV. Nests, with eggs from December and young from January, Howar islands 1971—1975 (JHC, MDG). The large nests are built on sand and exposed rock on beaches, on cliff tops and on old man-made structures; they are occasionally destroyed by fishermen. A pallid immature bird on sale in Manama market was probably from a local nest.

Moorhen *Gallinula chloropus*. ? Resident, and PM. A pair with three chicks seen amongst mangroves on 24 April 1971 (WACG). Occasionally seen in marshes and ditches, October—April, but is very secretive. Recorded breeding near Dhahran, eastern Saudi Arabia (Mrs L. Johansen, K. J. Fisher, in pers. comm.).

*** Kentish Plover** *Charadrius alexandrinus alexandrinus*. PM, SV, WV. Nests are widely dispersed near coasts and inland pools. Eggs, early February — late June.

(Caspian Tern *Hydroprogne tschegrava*. One probable record, see p. 10).

*** White-cheeked Tern** *Sterna repressa*. Common PM and SV. Arrives early April. Eggs from mid-May in much persecuted colonies within 400 m of water on some coasts of Bahrain, including the southern tip (and on other Gulf islands). Nests on flat ground or on sand hummocks up to 0.5 m high; on soft ground the movement of the parent birds forms a scrape, but no mound is made as reported in Ticehurst (1926). The nests are decorated with a rim of small shells and other objects brought during occupation.

The birds wet the feathers of their breast and abdomen in the sea and ponds by flying very low, holding wings and tail up as they dip on to the surface briefly; they then fly directly to settle on the eggs, which become encrusted with salt. These actions are dissimilar to fishing and bathing observed in this species. The species is additional to two terns (*S. albigularis* and *S. acuticauda*) listed in Maclean (1975) as having this habit. Meinertzhagen (1954: 538) incorrectly attributes this habit to the Slender-billed Gull *Larus genei*, which has not been found to breed on Bahrain (an error repeated by other authors, e.g. Bannerman, D. A. 1958. Birds of Cyprus: 343; Belgrave 1968; Maclean 1975).

*** Saunders' Little Tern** *Sterna saundersi*. Common PM, uncommon WV, SV in small numbers (under 50 pairs). Arrives mid-March. Eggs, one to three, early April — late June, in isolated nests or in small, loose colonies on open flat ground near some coasts, e.g. Ras Noma and south end of Sitra Id. The report of the collection of eggs from this species (Belgrave 1968) more probably refers to *S. repressa*.

*** Collared Dove** *Streptopelia decaocto decaocto*. PM, WV and resident, the latter rarely found. Nests and young reported on Bahrain and fledglings taken to market in 1969 (M. Atyatallah).

*** Turtle Dove** *Streptopelia turtur arenicola*. PM and SV, early April—mid-October. Seen frequently in display flight and song, but only one report of fledglings, in June (M. Atyatallah). Not previously recorded breeding in Arabia, but a specimen obtained near Najran on 19th June "may indicate breeding" (Meinertzhagen 1954: 446), and it was reported breeding at Fao (Sharpe 1886, 1891).

* **Ring-necked Parakeet** *Psittacula krameri borealis*. Resident and PM. Courtship, display, copulation, seen entering holes in old date palms and old buildings, also three reports of nestlings, December—March. Although some birds may be naturalised escapes there are also signs of a regular influx between August and November.

* **Barn Owl** *Tyto alba erlangeri*. Resident. An old nest was found in a tomb on 27 March 1921 (Cheesman 1923, 1926; Ticehurst and Cheesman 1925) and one bird was seen in a passage in Jebel Dukhan (Cheesman 1923). The species was re-discovered in April 1974 attacking domestic pigeons at an estate near Zallaq where several were shot by guards (A. Khalifa) and one was preserved. It is persecuted as a bird of ill omen and may be more common than reports indicate.

(**European Kingfisher** *Alcedo atthis*. See p. 10—11)

(**Bee-eater** *Merops* spp. See p. 10—11)

Hoopoe *Upupa epops*. PM, but a nest with two eggs found after rain at Awali in March 1969 (M. Jafari). Not previously recorded breeding on the Arabian coast of the Gulf.

* **Swallow** *Hirundo rustica rustica*. PM and occasional SV. On 27 March 1921 "common on Bahrain island, and were about to breed there" (Ticehurst and Cheesman 1925: 19); but the only proof is one nest on a door ledge in Manama (T. D. Lewis). The presence of Swallows feeding over Manama March—June, and the feeding of juveniles on the wing observed on 2 April and 4 July, may indicate regular nesting, but searches for nests in Manama have been restricted and negative.

* **Black-crowned Finch Lark** *Eremopterix nigriceps melanauchen*. Resident, PM and WV. Song flights over sand desert March—May. One chick observed being fed by the male away from the nest on 14 June 1969 (M. J. Strickland and MDG).

* **Desert Lark** *Ammomanes deserti insularis*. Resident. Quite common but local, in stone and rock desert, particularly on or near hills. Song flights strongly undulating, calling 'chew' on the upward flight and 'chup-chup, choo-oo-ee' on the downward sweep with wings closed, (perhaps the 'chucle-chucle, cheelee' of the nominate race, described by Simmons [1952]); individual calls varied and are distinct from calls of *A. d. taimuri* in Oman (MDG, personal observation 1975). The normal contact note, a soft 'tew', 'too-ee' and a louder 'chor-kee!' A nest with young under the edge of a boulder on the north slope of the Jebel, mid-March 1969, a cup of grass, torn paper, string and seed pods, 60 mm internal diameter, 30 mm deep, with walls 20 mm thick, the rim level with the dusty, stony surface.

* **Bifasciated Lark** *Alaemon alaudipes doriae*. Resident, and PM or WV. Display flights seen March—May over scrub desert away from habitation; young from April. The nest, usually in top centre of low scrub bushes, is of large twigs threaded into the bush with the base about 160 mm from the ground with a small unlined cup of finer twigs, grass, paper, date palm fibre, etc.; one cup measured 70 mm interior diameter, 35 mm deep, with walls 30 mm thick. One nest of three eggs had been overwhelmed by drifting sand piling up on the lee side, confirming the suggestion by Norris (1964) that the bird does not excavate in this sand to build. Though not seen on Bahrain nests on the ground are recorded from Iraq (Marchant 1963). One bird was seen excavate and kill a small gecko, *Stenodactylus khobarensis* (TDR).

* **Crested Lark** *Galerida cristata magna*. Common, resident and WV near cultivation and scrub. Courtship behaviour observed from December; eggs, usually

three, late January — late April. The nest is a cup in the ground, usually protected by a scrub bush into which one edge of the nest is built up.

* **Brown-necked Raven** *Corvus ruficollis ruficollis*. Former resident. Reports from 19th century; and "there is a flock ... living in and around the Jabel Al-Dukhan and nesting regularly there" (Belgrave 1968, where attributed to *C. corax*, a former name for the species). Between 1966 and 1971 five old nests were discovered in cliffs, but only one pair was present, one bird of which was found dead below the nest on which one had been seen sitting in March 1969.

* **White-eared Bulbul** *Pycnonotus leucotis* ? *mesopotamiae*. Common resident in well vegetated areas, nesting in a variety of places, including trees and buildings. Eggs early February — late June. Ripley (1951) described a pale race *dactylus* (specimens not seen by MDG and TDR) from Dammam, nearby in eastern Saudi Arabia, but the resident race on Bahrain is treated as *mesopotamiae* by Ticehurst and Cheesman (1925), Meinertzhagen (1954) and Vaurie (1959). However, specimens in BM(NH) from Bahrain, and one from Fao, Shatt al Arab, head of the Gulf, are paler than examples of *mesopotamiae* in BM (NH) and may represent *dactylus* or a colour cline (G. S. Cowles in pers. comm.).

* **Olivaceous Warbler** *Hippolais pallida elaeica*. PM and SV. Arrives first week April. Nests found 2 to 9 m up in bushes and deciduous trees *e.g.* *Terminalia catappa*, usually near water; a strong cup, woven on to twigs under protection of a shady leaf (see illustration in Harrison 1975 : 249 of a Bahrain nest from Gallagher's collection, now in BM (NH)). This is the first breeding record for Arabia, but it is known from Fao (nestlings of about 1891, in BM (NH), D. Goodwin in pers. comm.; Cumming 1918).

* **Graceful Warbler** *Prinia gracilis hufufae*. Common, resident in or near cultivation, except on Muharraq Id. where it is scarce. Song from the end of December. Nests February—July in scrub, hedges, vines, house creepers, etc., the highest seen was 9 m up in a small date palm, the lowest in a marigold plant.

* **Rufous Bush Chat** *Cecrotrichas galactotes familiaris* \geq *syriacus*. PM from early March and again end July—mid-October. SV, establishing territories from early April. Nests found at 5 ft (1.5 m) behind base of date palm leaves, at 1 m on vines, etc., though it may nest in any convenient place (in Iraq, even on the ground, Marchant 1963). Seen feeding fledglings on 31 August, so is probably double brooded. One nest from which one brood was raised on a date palm is a laterally compressed cup, deep, unrimmed and unlined, measuring internally 60 × 40 mm and 100 mm deep, externally 140 × 80 mm and 140 mm deep, constructed of palm bark fragments, grass and other vegetation, string and a few small feathers and pieces of wool.

* **House Sparrow** *Passer domesticus hufufae*. Common, resident within 1 km of habitation. Nests January—August, usually colonially in large domed grassy structures in trees, on pylons, in buildings, but occasionally in isolated holes in cliffs in desert.

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