

## A Review of the Status of the Breeding Waterbirds in Iran in the 1970s

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**Abstract:** This review summarises the distribution and abundance of all 78 species of waterbirds that were known or thought to have bred in Iran during the period 1970–1977, and gives national and regional population estimates for 62 species. Most of the wetlands of importance for breeding waterbirds have been identified as Important Bird Areas and Wetlands of International Importance. Recent studies indicate that there have been significant changes in the breeding populations of some waterbirds since the 1970s, and further work is required to document these changes in full.

**Keywords:** Breeding pair, waterbirds, wetlands, population, Iran.

### مروری بر وضعیت پرندگان آبی جوجه‌آور ایران در دهه ۱۹۷۰

**چکیده:** در این مقاله، پراکنش و فراوانی ۷۸ گونه از پرندگان آبی که جوجه‌آوری آن‌ها در تالاب‌های سال‌های ۱۹۷۰–۷۸ در ایران به ثبت رسیده است، مورد بررسی قرار می‌گیرد و جمعیت ۶۲ گونه در سطح منطقه‌ای و ملی برآورد می‌شود. بیشتر این تالاب‌های مهم برای جوجه‌آوری پرندگان آبی به عنوان مناطق مهم پرندگان و تالاب‌های مهم بین‌المللی شناخته شده‌اند. مطالعات اخیر جمعیت جوجه‌آور برخی از پرندگان آبی تغییرات معنی‌داری را از زمان دهه ۱۹۷۰ نشان می‌دهد و نیاز به ثبت این تغییرات در آینده ضروری می‌باشد.

## INTRODUCTION

This review of the status of waterbirds breeding in Iran in the 1970s is based on the results of numerous field surveys carried out by personnel of the Iran Department of the Environment between 1970 and 1977. During that period, one of the main activities of the Department's Ornithology Unit was to carry out surveys of wetlands and waterbirds throughout the country and identify sites suitable for inclusion within the Department's network of protected areas. Initially, emphasis was given to assessing the importance of Iran's wetlands for wintering waterbirds, especially species of Anatidae, and considerable effort was devoted to the annual mid-winter (January) waterbird censuses. This involved fielding teams of counters to all the main wetland areas, and undertaking low-level aerial surveys of the extensive wetlands of Khuzestan, central Fars, the Seistan basin and the entire south coast. However, it was apparent that many of Iran's wetlands were also of considerable importance as breeding habitat for

waterbirds. Lake Urumiyeh in Azarbaijan Province had been known for some years to support large breeding populations of Greater Flamingos *Phoenicopterus (ruber) roseus* and Great White Pelicans *Pelecanus onocrotalus*, while the extensive freshwater wetlands of the south Caspian lowlands were reported to support substantial breeding populations of Great Cormorants *Phalacrocorax carbo*, herons, egrets and Whiskered Terns *Chlidonias hybrida*.

In 1971, the Ornithology Unit initiated a programme of field surveys designed to cover all the major wetland areas in Iran during the breeding season, *i.e.* between April and August. Numerous surveys were carried out over the next six years, and by 1977, the only major gaps in coverage were the Hawr Al Azim marshes on the Iran/Iraq border (inaccessible for security reasons), several small offshore islands in the Persian Gulf (also inaccessible for security reasons), and much of the remote coastline between the Strait of Hormoz in Hormozgan Province and Chahbahar in Seistan & Baluchestan.

The principal breeding season surveys were as follows:

- Wetlands in the south Caspian lowlands (Gilan and Mazandaran): May 1971, July 1972 and April 1973.
- Wetlands on the Turkoman Steppe, Golestan: July 1972.
- Lake Urumiyeh and other wetlands in the Urumiyeh basin, Azarbaijan: aerial surveys in June/July 1971, June 1972, August 1973, June 1974, July 1975 and June 1977, and ground surveys in August 1971, August 1972, July 1974 and August 1976.
- Lake Zaribar, Kordestan: July 1974 and July 1975.
- Wetlands of central Fars Province: June 1971, May 1972, June 1975 and June 1977.
- Wetlands of Khuzestan Province: May 1972 and June 1974.
- Wetlands in the Seistan basin, Seistan & Baluchestan: April 1972 and June 1973.
- Islands in the Persian Gulf: Khark and Kharku in May/June 1974 and July 1977; Ummal Karam, Morghu and Nakhilu in June 1975; Lavan and Sheedvar in June 1972, June 1976, and June and July 1977; Hormoz, Larak and Hengam in May 1974.
- Qeshm Island, the Khouran Strait and Bandar Abbas region: May 1974, June 1975, July 1976 and June 1977.
- Lower Sarbarz River and Govater Bay, south-east Baluchestan: April 1972.

Much of the information on breeding waterbirds derived from these surveys has been utilised in the identification of Important Bird Areas in Iran (Evans 1994) and identification of wetlands of international importance for inclusion in *A Directory of Wetlands in the Middle East* (Scott 1995). Information on colonial species has been summarised in an unpublished report prepared for the Iran Department of the Environment in 1978 (D.A. Scott, unpubl. data), while information on seabirds has been summarised by Gallagher *et al.* (1984). However, no attempt has hitherto been made to provide a comprehensive review of the information on breeding waterbirds acquired by the Department of the Environment during the 1970s.

## SPECIES ACCOUNTS

The following species accounts summarise the distribution and abundance of all those species of waterbirds that were known or thought to have bred in Iran during the period 1970–1977. For the purposes of this review, the term ‘waterbird’ is taken to include all species belonging to the families Podicipedidae, Pelecanidae, Phalacrocoracidae, Ardeidae, Ciconiidae, Threskiornithidae, Phoenicopteridae, Anatidae, Rallidae, Dromadidae, Haematopodidae, Recurvirostridae, Burhinidae, Glareolidae, Charadriidae, Scolopacidae, Laridae and Sternidae, although it is acknowledged that some of these species, such as Socotra Cormorant *Phalacrocorax nigrogularis* and some of the terns, are more appropriately referred to as seabirds, while others, such as Stone Curlew *Burhinus oedicephalus* and Cream-coloured Courser *Cursorius cursor*, are not associated with wetlands. Species which may have bred in Iran prior to the 1970s, *e.g.* Corncrake *Crex crex* (Zarudny 1911) and Little Crake *Porzana parva* (Gyllin 1970), or which have been recorded breeding for the first time since the 1970s, *e.g.* Common Crane *Grus grus* (Ra'naghad *et al.* in press), are not considered here.

Table 1 lists all 78 species covered by this review, and gives national and regional population estimates for 62 species. No attempt has been made to estimate the size of the breeding populations of 16 species, mostly species that are secretive and difficult to observe, or species that are widespread in habitats other than wetlands. In a few instances, the national estimates in Table 1 are higher than the national estimates given by Scott (1995). This is because a more thorough appraisal of the 1970s data has indicated that the estimates given by Scott (1995) were too low, and does not imply any increase in the populations concerned.

Distribution maps are provided for four species: White Stork *Ciconia ciconia*, Cream-coloured Courser *Cursorius cursor*, Little Ringed Plover *Charadrius dubius* and Common Sandpiper *Actitis hypoleucos*. These maps indicate those 25km x 25km grid squares in which the species was known or thought to have bred in the 1970s.

The protection status and international designations of the principal wetlands mentioned in the species accounts are given in Appendix 1. Most of these wetlands have been identified as

Important Bird Areas and Wetlands of International Importance, and are described in some detail in Evans (1994) and Scott (1995), respectively.

**Table 1.** National and regional population estimates of waterbirds breeding in Iran in the 1970s, in breeding pairs. A + sign indicates present and breeding. The South Caspian includes Gilan, Mazandaran and Golestan; the South coast extends from the region of Bushire to the Pakistan border and includes all the islands. Note that the regional totals do not always add up precisely to the national estimate.

Species	No. of pairs in 1970s	Azarbaijan	South Caspian	Khuzestan	Central Fars	Seistan basin	South coast	Other regions
<i>Tachybaptus ruficollis</i>	No estimate	+	+	+	+	+	0	+
<i>Podiceps grisegena</i>	1	1	0	0	0	0	0	0
<i>Podiceps cristatus</i>	200–300	45–60	50–55	5–10	45–50	5–10	0	50–100
<i>Podiceps nigricollis</i>	150–200	125–200	0	0	0–20	0	0	0
<i>Pelecanus onocrotalus</i>	1,000–1,600	1,000–1,600	0	0	0	0	0	0
<i>Pelecanus crispus</i>	5–10	0	0	1+	5–10	0	0	0
<i>Phalacrocorax pygmeus</i>	?	0	?	?	0	0	0	0
<i>Phalacrocorax carbo</i>	5,200–6,000	0	5,200–6,000	0	0	0	0	0
<i>Phalacrocorax nigrogularis</i>	50–100	0	0	0	0	0	50–100	0
<i>Egretta garzetta</i>	850	150	400	150	100	50	0	0
<i>Egretta gularis</i>	150–200	0	0	50	0	0	100–150	0
<i>Ardea cinerea</i>	90–100	25	30	?	0	40	0	0
<i>Ardea goliath</i>	3–5	0	0	0	0	0	3–5	0
<i>Ardea purpurea</i>	300–400	40–50	80–100	125–150	30–50	10–15	10	15–25
<i>Casmerodius albus</i>	30	0	0	0	0	0	30	0
<i>Bubulcus ibis</i>	120	0	75	45	0	0	0	0
<i>Ardeola ralloides</i>	1,200	100–120	700	160–180	200	0	0–5	0–5
<i>Ardeola grayii</i>	30–50	0	0	0	0	0	30–50	0
<i>Butorides striatus</i>	3–4	0	0	0	0	0	3–4	0
<i>Nycticorax nycticorax</i>	700–750	150–160	410–420	30–40	100	20	10	0
<i>Ixobrychus minutus</i>	No estimate	+	+	+	+	+	+	+
<i>Botaurus stellaris</i>	<50	0	?	0–10	?	0–35	0	0
<i>Ciconia nigra</i>	<10	0	?	0	<5	0	0	<10
<i>Ciconia ciconia</i>	3,180–3,375	2,180–2,220	0	185–215	85–95	0	0	730–845
<i>Plegadis falcinellus</i>	130–200	100–150	0	0	30–50	0	0	0
<i>Threskiornis aethiopicus</i>	?	0	0	?	0	0	0	0
<i>Platalea leucorodia</i>	210–390	50–100	0	0	40–170	120	?	0
<i>Phoenicopiterus ruber</i>	15,000–25,000	15,000–25,000	0	0	0	0	0	0
<i>Oxyura leucocephala</i>	20–30	10–15	0	0	5–10	0	0	1–7
<i>Anser anser</i>	5–10	3–5	0	0	0	0	0	1–2
<i>Tadorna ferruginea</i>	700–1,100	450–750	0	<5	200–250	5–10	<5	25–50
<i>Tadorna tadorna</i>	4,500–5,500	4,000–5,000	0	0	110–260	?	0	0
<i>Anas strepera</i>	<10	<10	0	0	0	0	0	0
<i>Anas crecca</i>	?	?	0	0	0	0	0	0
<i>Anas platyrhynchos</i>	500–800	350–550	?	0	50–70	0	0	100–150
<i>Anas querquedula</i>	<50	<50	0	0	0	0	0	<10
<i>Anas clypeata</i>	<50	<50	0	0	0	0	0	0
<i>Marmaronetta angustirostris</i>	1,000–2,000	35–55	0	500–1,000	400–600	0–5	15–20	0
<i>Netta rufina</i>	<10	0	?	0	<10	?	0	0
<i>Aythya ferina</i>	<50	<50	?	0	?	0	0	<10

A review of the status of the breeding waterbirds in Iran in the 1970s– D.A. Scott

Species	No. of pairs in 1970s	Azarbaijan	South Caspian	Khuzestan	Central Fars	Seistan basin	South coast	Other regions
<i>Aythya nyroca</i>	150–300	50–100	<10	<5	20–30	5–10	0	50–100
<i>Aythya fuligula</i>	<10	<10	0	0	0	0	0	0
<i>Rallus aquaticus</i>	No estimate	?	+	?	+	0	+	+
<i>Porzana pusilla</i>	No estimate	0	0	0	+	0	0	0
<i>Porzana porzana</i>	No estimate	?	+	+	?	0	0	+
<i>Porphyrio porphyrio</i>	Several 100	0	100s	<50	0	<10	0	0
<i>Gallinula chloropus</i>	No estimate	+	+	+	+	+	0	+
<i>Fulica atra</i>	3,000–5,000	2,000–3,000	250–500	100–200	250–500	100–200	0	250–500
<i>Dromas ardeola</i>	>2,000	0	0	0	0	0	>2,000	0
<i>Haematopus ostralegus</i>	20–40	20–40	0	0	0	0	0	0
<i>Himantopus himantopus</i>	1,350–1,850	500–750	400–450	200–300	100–150	100	25–50	20–30
<i>Recurvirostra avosetta</i>	1,600–2,000	1,500–2,000	0	<10	20–150	0	7	0
<i>Burhinus oedicnemus</i>	No estimate	+	+	+	+	0	+	+
<i>Esacus recurvirostris</i>	25+	0	0	0	0	0	25+	0
<i>Cursorius cursor</i>	No estimate	0	0	?	0	0	0	+
<i>Glareola pratincola</i>	1,300–2,000	250–380	700–1,050	250–500	40–50	5–10	25	<10
<i>Charadrius dubius</i>	No estimate	+	+	+	+	+	+	+
<i>Charadrius alexandrinus</i>	No estimate	+	+	+	+	+	+	+
<i>Charadrius leschenaultii</i>	<20	<10	0	0	0	0	0	<10
<i>Vanellus vanellus</i>	1,000–2,000	900–1,800	0	0	0–10	0	0	120–200
<i>Vanellus indicus</i>	No estimate	0	0	+	+	+	+	+
<i>Vanellus leucurus</i>	300–500	0	<5	200–300	100–150	10–15	6	<10
<i>Tringa totanus</i>	3,000–4,000	2,800–3,900	0	0	20–35	0	0	20–50
<i>Actitis hypoleucos</i>	No estimate	+	0	0	0	0	0	+
<i>Larus armenicus</i>	4,000–5,000	4,000–5,000	0	0	0	0	0	0
<i>Larus ridibundus</i>	200–500	200–500	0	0	0	0	0	0
<i>Larus genei</i>	4,000–5,500	3,000–4,000	350–400	400–800	0	150–200	0	0
<i>Sterna nilotica</i>	200–350	20–30	20–40	100–200	0	5–10	35–65	0
<i>Sterna caspia</i>	30–50	5–10	0	15–20	0	0–5	10–20	0
<i>Sterna bengalensis</i>	many 1,000s	0	0	0	0	0	many 1,000	0
<i>Sterna bergii</i>	many 1,000s	0	0	0	0	0	many 1,000	0
<i>Sterna sandvicensis</i>	?	0	0	0	0	0	?	0
<i>Sterna hirundo</i>	250–400	40–70	140–200	60–100	5–10	10–15	?	?
<i>Sterna albifrons</i>	900–1,300	50–100	550–750	175–300	20–30	40–70	40–50	0
<i>Sterna saundersi</i>	160–200	0	0	0	0	0	160–200	0
<i>Sterna repressa</i>	100,000–300,000	0	0	0	0	0	100,000–300,000	0
<i>Sterna anaethetus</i>	25,000–27,000	0	0	0	0	0	25,000–27,000	0
<i>Chlidonias hybrida</i>	4,000–7,000	150–250	3,300–6,300	20–30	0	350–450	0	0

**Little Grebe** *Tachybaptus ruficollis*: A common breeding bird at suitable wetlands in the Caspian lowlands in Gilan and Mazandaran, in the Urumiyeh basin in Azarbaijan, and in central Fars, Khuzestan and the Seistan basin. Also found breeding at Lake Ajigol and Lake Eymar in Golestan (Gorgan), Lake Gori in Azarbaijan, Galenow Marsh near Tehran, Lake Zaribar in Kordestan, Assadabad Plain in Hamadan, Hashelan wetland and Ravanzir Dam in Kermanshah, Pol-e Dokhtar Lake in Lorestan, and along the Zayandeh Rud in Esfahan. No attempt was made to estimate the size of the population.

**Red-necked Grebe** *Podiceps grisegena*: A pair was watched nest building and at least one other bird was present at Lake Gori, Azarbaijan, on 4 June 1971. This appears to be the only breeding record of this species in Iran.

**Great Crested Grebe** *Podiceps cristatus*: A locally common breeding bird at wetlands in Gilan, Mazandaran, Golestan, Azarbaijan, Kordestan, central Fars, Khuzestan and Seistan. Found breeding at the following localities: Anzali Mordab (20 pairs) and Siahkesheem (4 pairs) in Gilan; Lapoo-Zargmarz Abbandans (10–15 pairs) in Mazandaran; Lake Alagol (10 pairs), Lake Ajigol (2 pairs) and Lake Ulmagol (3 pairs) in Golestan; Akh Gol (1 pair), Gori Gol (1–2 pairs), Lake Kobi (15 pairs), Shur Gol, Yadegarlu and Dorgeh Sangi (20–30 pairs), Mahabad Dam (5–10 pairs) and Nowruzlu Dam (1 pair) in Azarbaijan; Lake Zaribar (50–100 pairs) in Kordestan; Lake Maharlu (1 pair), Lakes Tashk and Bakhtegan (5–10 pairs), Dasht-e Arjan (16 pairs in 1972), Lake Parishan (20–25 pairs) and Zarghan Marshes (2 pairs) in Fars; Izeh and Shiekho Lakes (2 pairs) and Shadegan Marshes (1 pair) in Khuzestan; and Hamoun-i Sabari (1+ pair) and Hamoun-i Puzak (2–3 pairs) in Seistan. This species is not normally colonial, but a group of about 20 nests was found at Anzali Mordab in May 1971, and there were 250 birds with at least 40 nests in a very small area of Lake Zaribar in July 1974. The total population was estimated at 200–300 pairs.

**Black-necked Grebe** *Podiceps nigricollis*: A very local breeding species in Iran, the only regular breeding site being at Lake Gori in Azarbaijan where there was a colony of 125–150 pairs. About 50 pairs bred at Lake Kobi, Azarbaijan, in 1972, and about 20 pairs bred at Dasht-e Arjan, Fars, in 1972. There was a single bird in breeding plumage at Akh Gol, Azarbaijan, on 9 July 1974.

**Great White Pelican** *Pelecanus onocrotalus*: Between 1,000 and 1,600 pairs bred on the Doghouzlar Islands in Lake Urumiyeh, Azarbaijan,

from at least 1970 to 1977. At least 70 pairs bred at Lake Tashk, Fars, in 1965 (L. Cornwallis, pers. comm.), but during the 1970s, only small numbers of non-breeding birds were recorded at the wetlands of central Fars during the breeding season.

**Dalmatian Pelican** *Pelecanus crispus*: Five to ten pairs bred in a loose colony in reed-beds at Lake Parishan, Fars, from at least 1970 to 1977. In June 1970, eight pairs were nesting on a disused reed boat in the lake. The only other breeding record of this species in the 1970s was a single nest (with two chicks) near Bandar-e Imam Khomeini, south-east of Shadegan Marshes, Khuzestan, in January 1975.

**Pygmy Cormorant** *Phalacrocorax pygmeus*: Breeding was never confirmed during the 1970s. The odd pair may have nested at Anzali Mordab in 1972, as a juvenile appeared at the nearby Galugah Abbandan on 4 July 1972. Small numbers of non-breeding birds were present between April and August in Gilan in 1970, 1971, 1972, 1973 and 1975, mostly in the Anzali Mordab area but also at Bandar Kiashar Lagoon and in the coastal marshes south of Astara. The species may also have nested in the extensive marshes of the Hawr Al Azim in Khuzestan, but access to these marshes on the Iraqi border was prohibited in the 1970s.

**Great Cormorant** *Phalacrocorax carbo*: A common breeding bird in the south Caspian region, occurring in large tree-nesting colonies. Four colonies were located: Abbasabad Dam near Astara, Gilan (1,200–1,500 pairs); Asalem, Gilan (2,000 pairs); Bandar Kiashar Lagoon, Gilan (1,000+ pairs); and Sisangan, Mazandaran (1,000+ pairs). At the Abbasabad, Asalem and Bandar Kiashar sites, there were also large mixed colonies of herons and egrets.

**Socotra Cormorant** *Phalacrocorax nigrogularis*: The only known breeding site was a small colony of 50–100 pairs in boulders at the east end of Sheedvar Island near Lavan Island in the Persian Gulf. This colony was discovered in June 1972 and was still present in 1976 and 1977.

**Little Egret** *Egretta garzetta*: A fairly common breeding bird at wetlands in Gilan, Mazandaran, Azarbaijan, Khuzestan, Fars and Seistan, nesting in mixed colonies with other herons and egrets. Thirteen colonies were located: at Abbasabad Dam (40 pairs), Asalem (40 pairs), Anzali Mordab (150 pairs) and Bandar Kiashar (30 pairs) in Gilan; at the Seyed Mohalli Abbandans (40 pairs) and Miankaleh Wildlife Refuge (100 pairs) in Mazandaran; on the Doghouzlar Islands in Lake Urumiyeh (15 pairs), at Ghara Gheshlaq (25 pairs) and in the Lake Kobi area

(100 pairs) in Azarbaijan; at Bamdej Marshes (50 pairs) and Shadegan Marshes (100 pairs) in Khuzestan; at Lake Parishan (100 pairs) in Fars; and at the Hamoun-i Sabari (50 pairs) in Seistan. A few birds also nested at Nowruzlu Dam (5 pairs) and Mahabad Dam (3 pairs) in Azarbaijan in 1975. The total population was estimated at about 850 pairs.

**Western Reef Egret** *Egretta gularis*: Present throughout the year along the entire south coast from southern Khuzestan to Govater Bay on the Pakistan border. Breeding colonies were located in the southern part of Shadegan Marshes, Khuzestan (40 pairs in 1974), on Morghu Island (20 pairs in June 1975), Ummal Karam Island (26 pairs in June 1975) and Sheedvar Island (8–12 pairs in 1972, 1976 and 1977) in the Persian Gulf, and in the mangroves in Hara Protected Area in the Khouren Strait, Hormozegan (at least 50 pairs in 1975). The birds were nesting on the ground or in low shrubs on the offshore islands and in mangrove swamps in the Khouren Strait. The estimate of 150–200 pairs is a minimum, as large sections of the south coast were not surveyed during the breeding season.

**Grey Heron** *Ardea cinerea*: A rather scarce breeding species, occurring in small numbers in mixed colonies of herons and egrets in Gilan, Mazandaran, Azarbaijan and Seistan. Birds were found breeding at Asalem (6 pairs) and Anzali Mordab (20+ pairs), Gilan, at the Seyed Mohalli Ab-bandans (1+ pair) and Miankaleh Wildlife Refuge (2 pairs), Mazandaran, in the Lake Kobi area (25 pairs), Azarbaijan, and at Hamoun-i Sabari (40 pairs), Seistan. A few pairs probably also bred in the Bandar Kiashar area, Gilan. Several may have bred in Shadegan Marshes, Khuzestan, in 1972, but 40 birds in these marshes in early June 1974 were almost certainly non-breeders. The total population was estimated at about 90–100 pairs.

**Goliath Heron** *Ardea goliath*: Single pairs were found nesting in a colony of Great Egrets and Western Reef Egrets in mangroves in Hara Protected Area in the Khouren Strait in 1976 and 1977. Two chicks were ringed in June 1977. These were the first breeding records of this species in Iran. It is likely that several other pairs were breeding in the mangrove swamps along the coast of Hormozegan, e.g. in the deltas of the Rud-e Gaz and Rud-e Hara south of Minab, as 17 individuals were recorded during an aerial survey of the entire coastline in January 1974.

**Purple Heron** *Ardea purpurea*: A fairly common breeding bird at suitable wetlands in Gilan, Mazandaran, Azarbaijan, Kordestan, Khuzestan, Bushehr, Fars and Seistan, nesting singly in reed-beds or in small numbers in mixed colonies of other species. The main colonies were at Anzali Mordab

(10–20 pairs), Gilan, Seyed Mohalli Ab-bandans (20 pairs) and Miankaleh Wildlife Refuge (40 pairs), Mazandaran, the Lake Kobi area (30 pairs), Azarbaijan, and Bamdej Marshes (60 pairs) and Shadegan Marshes (60 pairs), Khuzestan. Other sites where birds were recorded during the breeding season and assumed to be breeding included Amirkelayeh Lake, Gilan (5–10 pairs), marshes at the south end of Lake Urumiyeh, Azarbaijan (10+ pairs), Lake Zaribar, Kordestan (10+ pairs), Hashelan wetland, Kermanshah (several pairs), Dez River marshes, Khuzestan (several pairs), Gumoon Marshes, Lake Tashk (5–10 pairs), Doshok Marshes, Lake Bakhtegan (5+ pairs), Soltanabad Marshes (5–10 pairs), Lake Maharlu (several pairs), Dasht-e Arjan (10 pairs) and Lake Parishan (5–10 pairs), Fars, Hamoun-i Sabari (10 pairs) and the marshes at the south end of Hamoun-i Puzak (a few pairs in 1973), Seistan, and Helleh Delta (10 pairs), Bushehr. One or two pairs may have bred at Lake Eymar, Golestan, in 1972, Pol-e Dokhtar Lake, Lorestan, in 1972, Hamidieh Lake, Khuzestan, in 1972, and Zarghan Marshes, Fars, in 1972. The total population was estimated at about 300–400 pairs.

**Great Egret** *Casmerodius albus*: A breeding colony of about 30 pairs was discovered in the mangroves in Hara Protected Area in the Khouren Strait, Hormozegan, in May 1974, and found again in the same area in 1975, 1976 and 1977. The form concerned is *modestus* (This form is now sometimes split off as a separate species, the Eastern Great Egret *Casmerodius modestus*). It is possible that there were other breeding colonies in the mangroves further east in Hormozegan, as these areas were never surveyed during the breeding season.

**Cattle Egret** *Bubulcus ibis*: A rather scarce breeding species in Gilan, Mazandaran and Khuzestan, nesting in mixed colonies with other herons and egrets. The total population was estimated at about 120 pairs at eight sites: Abbasabad Dam (10 pairs), Asalem (10 pairs), Anzali Mordab (20 pairs) and Bandar Kiashar (1+ pair) in Gilan; Seyed Mohalli Ab-bandans (20 pairs) and Miankaleh Wildlife Refuge (15 pairs) in Mazandaran; and Bamdej Marshes (40 pairs) and Shadegan Marshes (1+ pair) in Khuzestan.

**Squacco Heron** *Ardeola ralloides*: A common breeding bird at wetlands in Gilan, Mazandaran, Azarbaijan, Khuzestan and Fars, nesting in mixed colonies with other herons and egrets. The ten largest colonies were as follows: Abbasabad Dam (50 pairs), Asalem (40 pairs), Anzali Mordab (150 pairs) and Bandar Kiashar (10 pairs) in Gilan; Seyed Mohalli Ab-bandans (250 pairs) and Miankaleh Wildlife Refuge (200+ pairs) in Mazandaran; the Lake Kobi area (100 pairs) in Azarbaijan; Bamdej Marshes (60 pairs) and Shadegan Marshes (100 pairs) in

Khuzestan; and Lake Parishan (200 pairs) in Fars. A few pairs probably also bred at Amirkelayeh Lake in Gilan, Lake Gori and Mahabad Dam in Azarbaijan, Lake Zaribar in Kordestan, Lake Maharlu and Soltanabad Marshes in Fars, Izeh and Shiekho Lakes, Dez River marshes, Karkheh River marshes and Hamidieh Lake in Khuzestan, and Helleh Delta in Bushehr. The total population was estimated at about 1,200 pairs.

**Indian Pond Heron** *Ardeola grayii*: A rather scarce resident, breeding singly or in loose colonies in mangrove swamps in the southern Persian Gulf and probably also along the coast of Persian Baluchestan to Govater Bay on the Pakistan border. At least 30 pairs were found nesting in the mangroves in Hara Protected Area in the Khouran Strait in 1974, 1975, 1976 and 1977. About 15 birds were recorded in the mangroves at Govater Bay, Baluchestan, in March 1971 and April 1972, and thought to be breeding locally. Small numbers of birds were observed in mangroves in the deltas of the Rud-e Gaz, Rud-e Jagin and Rud-e Gabrik in January 1973 and 1974, and in mangroves in Jask Creek in October 1973, but these areas in Hormozegan were not surveyed during the breeding season. The estimate of 30–50 pairs is therefore an absolute minimum.

**Striated Heron** *Butorides striatus*: A very scarce breeding bird in the Persian Gulf and Strait of Hormoz, first discovered on Lavan Island and Sheedvar Island in June 1972 and perhaps a recent colonist as the only previous record in Iran appears to be a report of three birds (two of which were collected) on “Shatwar (or Sheedvar) Island” near Lavan Island in April 1938 (Løppenthin 1951). Three birds, including one immature, were found on Lavan Island on 8–9 June 1972, and a total of eleven birds were located during a thorough survey of Sheedvar Island on 9–11 June 1972. Four adults and an unfledged young were found on Sheedvar in June 1976, and single adults were seen there on 26 June and 19 July 1977. These figures suggest a breeding population of 3–4 pairs. The only other records during the 1970s were one on a rocky shore 8 km east of Jask on 13 October 1973, one at Dargahan on Qeshm Island on 15 February 1974, and one in the mangroves in Hara Protected Area on 6 June 1975.

**Black-crowned Night Heron** *Nycticorax nycticorax*: A common breeding bird, usually in mixed colonies with other herons and egrets, in Gilan, Mazandaran, Azarbaijan, Khuzestan, Fars, Seistan and the northern Persian Gulf. The eleven largest colonies were as follows: Abbasabad Dam (70 pairs), Asalem (100 pairs), Anzali Mordab (20 pairs) and Bandar Kiashar (200 pairs) in Gilan; Miankaleh Wildlife Refuge (20+ pairs) in Mazandaran; Ghara Gheshlaq (25 pairs), the

Lake Kobi area (100 pairs) and Nowruzlu Dam (20 pairs) in Azarbaijan; Bamdej Marshes (30 pairs) in Khuzestan; Lake Parishan (100 pairs) in Fars; and Hamoun-i Sabari (20 pairs) in Seistan. There were also small colonies at Mahabad Dam (10–15 pairs) in Azarbaijan, Shadegan Marshes (1+ pair) in Khuzestan, and Helleh Delta (10 pairs) in Bushehr, and a few pairs probably bred at Seyed Mohalli Ab-bandans, Mazandaran, and in the Dez River marshes, Khuzestan. The total population was estimated at 700–750 pairs.

**Little Bittern** *Ixobrychus minutus*: A common and widespread summer visitor (from April to October and occasionally November), apparently breeding in suitable reed-bed habitats throughout the country. No nests were found, but birds were recorded in suitable breeding habitat during the breeding season in the main wetland areas in Gilan, Mazandaran, Golestan, Azarbaijan, Kordestan, Kermanshah, Lorestan, Khuzestan, Fars and Seistan, and also at Helleh Delta in Bushehr, Hara Protected Area in Hormozegan, Tang-e Mordan in Kerman, near Tabas in Khorasan, and near Kuh-e Bazman and near Kuhak in Baluchestan. No attempt was made to estimate the size of the population.

**Great Bittern** *Botaurus stellaris*: Status uncertain. Possibly only a regular breeding bird in Shadegan Marshes in Khuzestan, where one was heard booming in May 1972 and six were heard booming in June 1974. Apparently breeding commonly in the wetlands of the Seistan basin in June 1973, when 20–30 were heard booming in the vast reed-beds at Hamoun-i Sabari, and three were heard in the Takht-e Shah marshes at the south end of Hamoun-i Puzak. (The wetlands of the Seistan basin were in excellent condition in the summer of 1973, following two winters of heavy rainfall). There were only two other records of birds during the breeding season: a single bird booming in Miankaleh Wildlife Refuge, Mazandaran, in April 1973, and a single bird seen at Dasht-e Arjan, Fars, on 9 May 1972.

**Black Stork** *Ciconia nigra*: A very scarce and perhaps irregular breeding species, with probably fewer than 10 pairs in the country. Birds were seen in suitable breeding habitat during the breeding season in the western Alborz (Nur Gol), Zanzan Province, the Zagros in Fars, the Kerman highlands and northern Khorasan. The only confirmed breeding record was at a cliff about 15 km south of Aliabad, Fars, in April 1970 (D.A. Ferguson, pers. comm.), but breeding was strongly suspected at a wooded crag on Kuh-i Khabr, Kerman, in May 1975. Small groups of presumed non-breeding birds were regularly encountered during the summer months in the Gorgan Bay area (eg 15 on 10–11 July 1972, 16 on 26 July 1973, and 21 on 2

August 1975), and were also recorded at Lake Alagol, Golestan (10 on 13 July 1972), and Lake Maharlu, Fars (9 on 19 June 1961).

**White Stork** *Ciconia ciconia*: A nation-wide census of breeding White Storks was carried out by the Department of the Environment in 1974 as part of an international census of storks in Europe and the Middle East. The total Iranian breeding population was estimated at 3,180–3,375 pairs in 13 provinces (Fotoohi & Scott, unpubl. data) (Table 2, Fig. 1). The largest single concentration of breeding pairs was a colony of c. 120 pairs in oak forest near Lake Zaribar, Kordestan.

**Glossy Ibis** *Plegadis falcinellus*: A locally common breeding species, found nesting in colonies in reed-beds at the south end of Lake Urumiyeh (100+ pairs), Lake Kobi (100–150 pairs), Shur Gol, Yadegarlu and Dorgeh Sangi (50–75 pairs) and Ghara Gheshlaq (60 pairs) in Azarbaijan. The birds changed their breeding sites from year to year, and no more than 100–150 pairs were found breeding in any one year. Between 30 and 50 pairs bred in reed-beds at Lake Parishan, Fars, in 1975, 1976 and 1977, and some birds probably bred at Dasht-e Arjan in 1968 (L. Cornwallis, pers. comm.) and again in 1972. A few individuals were recorded during the summer months in the Anzali Mordab area, Gilan, but there was no evidence of breeding. The total population was estimated at 130–200 pairs.

**Sacred Ibis** *Threskiornis aethiopicus*: A scarce winter visitor to the wetlands of Khuzestan, recorded annually from 1971 to 1975, mostly in the Dez River marshes north of Ahwaz and at Bamdej Marshes. The highest mid-winter counts were 51 and 96 during the aerial surveys of 1973/74 and 1974/75, respectively.

Most records were in January and February.

However, five or six birds were present in Shadegan Marshes on 3 March 1972, eight including one juvenile in Shadegan Marshes on 13–14 May 1972, and nine in Bamdej Marshes on 6 June 1974. It is possible, therefore, that a few pairs were breeding somewhere in Khuzestan.

**Eurasian Spoonbill** *Platalea leucorodia*: Breeding was only confirmed on islets in Lake Urumiyeh, Azarbaijan (50–100 pairs annually), in reed-beds at Lake Parishan, Fars (40–170 pairs in 1975, 1976 and 1977), and in reed-beds at the Hamoun-i Sabari, Seistan (120 pairs in 1973). However, the species may also have bred in the Helleh Delta, Bushehr in 1974, as 78 adults and 14 immatures were present on 3 June. There was a large breeding colony in Zarghan Marshes, Fars, in 1965 (E.V. Thompson, *in litt.*), and the species probably bred at Dasht-e Arjan, Fars, in 1968 and 1969 (L. Cornwallis, pers. comm.) and again in 1972 (at least 20 birds in the reed-beds on 9 May). Small flocks of non-breeders were recorded during the summer months at wetlands in Gilan, Mazandaran, Khuzestan, Fars and Hormozegan. The total population was estimated at 210–390 pairs.

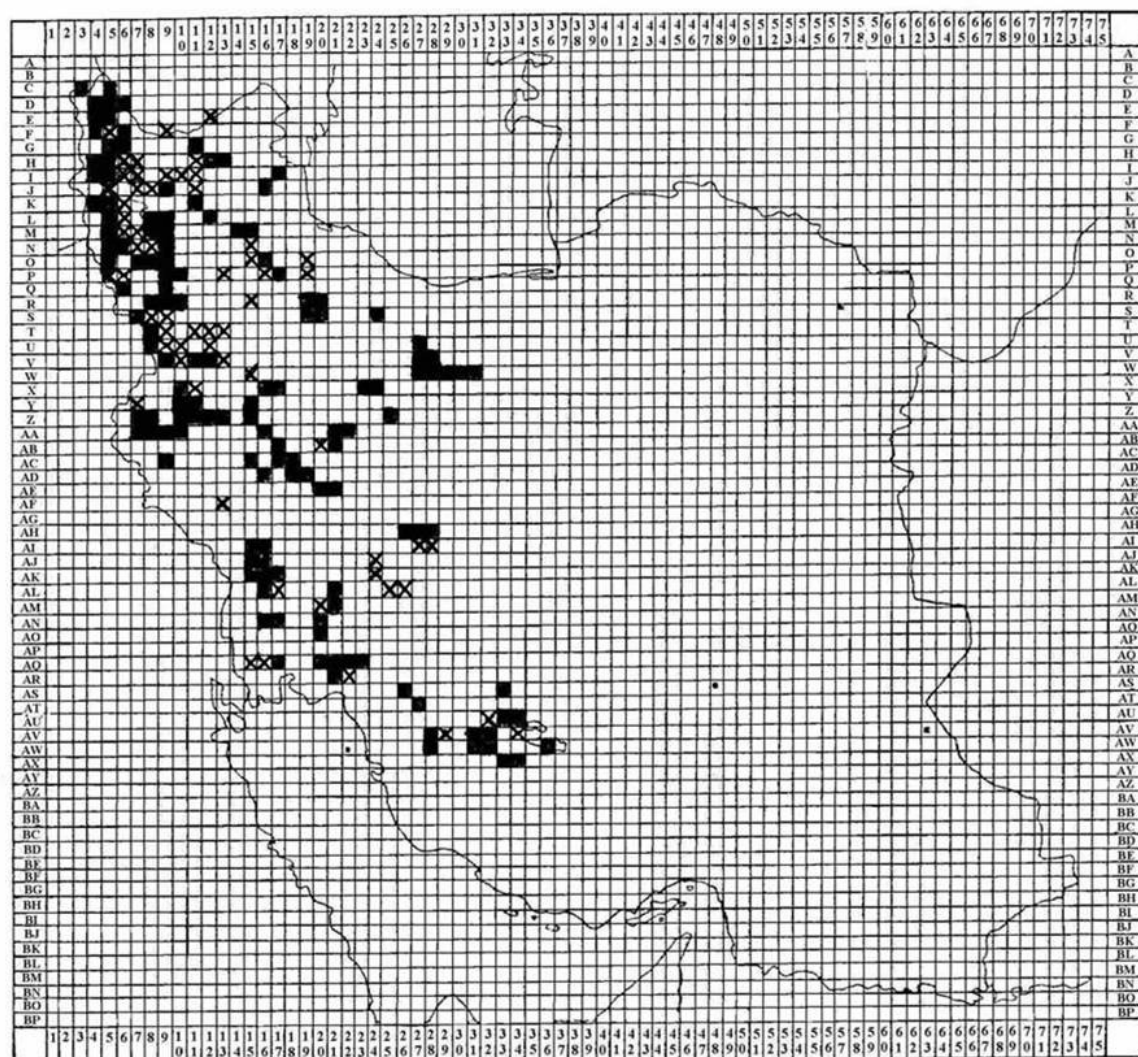
**Greater Flamingo** *Phoenicopterus ruber*: Throughout the 1970s, Greater Flamingos nested in large numbers at one or more colonies on islands in Lake Urumiyeh, Azarbaijan. Aerial censuses of the colonies gave total estimates of between 15,000 and 25,000 pairs. Flamingos were known to have bred in large numbers at this lake since at least 1965 (H. Dowlatshahi, *in litt.*). There were no indications of breeding elsewhere in Iran, but large numbers of non-breeding birds were present during the summer at saline wetlands in Khuzestan and Fars, e.g. Shadegan Marshes (2,000 in May 1970 and 2,890 in May 1972), Lake Bakhtegan (2,160 in May 1972) and Lake Tashk

**Table 2.** Results of the national White Stork census in Iran in 1974.

Province	No. of nests found	Estimated no. of nests missed	Estimated total
West Azarbaijan	2,092	30–60	2,120–2,150
East Azarbaijan	56	5–15	60–70
Kordestan	205	30–60	235–265
Zanjan	14	3–5	15–20
Kermanshah	103	20–35	125–140
Hamadan	39	15–25	55–65
Tehran	43	10–15	55–60
Ilam	8	3–5	10–15
Lorestan	160	25–40	185–200
Esfahan	21	10–20	30–40
Khuzestan	155	30–60	185–215
Chaharmahal & Bakhtiari	0	20–40	20–40
Fars	74	10–20	85–95
<b>Total</b>	<b>2,970</b>	<b>211–400</b>	<b>3,180–3,375</b>

Source: Fotoohi & Scott, unpubl. data.





**Figure 1.** Breeding distribution of the White Stork *Ciconia ciconia* in Iran in the 1970s. Key to symbols: ■ – 25 km grid squares in which breeding was confirmed; x – 25 km grid squares in which birds were observed during the breeding season and were thought to be breeding.

(1,600 in June 1971 and May 1972), and much smaller numbers were sometimes present in the Seistan basin and southern Persian Gulf, e.g. 124 at Hamoun-i Sabari in June 1973 and 13 near Bandar Abbas in June 1975.

**White-headed Duck** *Oxyura leucocephala*: Breeding was confirmed at several wetlands in Azarbaijan, at Lake Zaribar in Kordestan, and at Lake Parishan in Fars, and the total population was estimated at about 20–30 pairs. In Azarbaijan, birds were recorded during the breeding season at Lake Gori (2–4 pairs in 1971, 1972 and 1973), Gordeh Git (four females and five chicks in July 1975), the Lake Kobi area (four males and two females in June–July 1971, one male in June 1972, and a total of 33 birds in July 1975), Yadegarlu (eight males and four females in June 1971), Dorgeh Sangi (two males and one female in August 1971), and Mahabad Dam (two

birds in July 1975). At Lake Zaribar, there were seven females, a brood of six chicks and a single male in July 1974, and one pair in July 1975. At Lake Parishan, there were at least three females and a male in May 1972, three females and three chicks in June 1975, up to 36 adults and one brood of five chicks in April–June 1976, and a total of 60 birds in June 1977.

**Greylag Goose** *Anser anser*: A rare and perhaps irregular breeding bird in the extensive marshes around Lake Urumiyeh, Azarbaijan, and at Lake Zaribar, Kordestan. Three pairs with broods of young and five other birds were recorded during an aerial survey of Lake Urumiyeh on 17–18 June 1972, and single birds were recorded during aerial surveys of the lake on 29 August 1973 and 29 June 1974. A pair with four chicks and another pair were observed at Lake Zaribar on 13 July 1974.

**Ruddy Shelduck** *Tadorna ferruginea*: A common breeding bird in the wetlands of Azarbaijan (450–750 pairs) and central Fars (200–250 pairs), but rather scarce at wetlands elsewhere. In Azarbaijan, the largest numbers were around Lake Urumiyeh (300–500 pairs) and at wetlands on the plains to the south (Lake Kobi, Shur Gol, Yadegarlu, Dorgeh Sangi and Nowruzlu Dam), but breeding was also recorded at Akh Gol (30–40 pairs), Gori Gol (20 pairs) and Nur Gol (30 pairs). In Fars, there were about 100 pairs at Lake Bakhtegan and Lake Tashk, 30–50 pairs at Lake Maharlu, 20–30 pairs at Lake Parishan, and smaller numbers at Haft Barm, Zarghan, Lapuyee, Kamjan and Dasht-e Arjan. Breeding was confirmed at Miandasht Wildlife Refuge, Khorasan, in May 1975 (a pair and six chicks), and suspected at Gandoman Marsh, Esfahan (one pair), Shadegan Marshes, Khuzestan (2 pairs), Helleh Delta, Bushehr (2 pairs), Hamoun-i Helmand, Seistan (one pair) and Hamoun-i Sabari, Seistan (five pairs). The total population was estimated at 700–1,100 pairs.

**Common Shelduck** *Tadorna tadorna*: An abundant breeding bird in the Lake Urumiyeh basin, and a fairly common breeding bird at saline lakes in central Fars. The total population was estimated at 4,500–5,500 pairs, of which 4,000–5,000 pairs were at Lake Urumiyeh. A few pairs bred at other wetlands in the Urumiyeh basin and at Akh Gol (several pairs in 1974), and a few pairs may have bred at Gori Gol in 1971 and Nur Gol in 1973. In central Fars, breeding was recorded at Lake Tashk (50–150 pairs), Lake Bakhtegan (50–100 pairs) and Lake Maharlu (5–10 pairs). A few pairs were probably breeding at Hamoun-i Sabari, Seistan, in June 1973.

**Gadwall** *Anas strepera*: Probably a regular breeding bird in very small numbers in the wetlands of the Urumiyeh basin in Azarbaijan, although breeding was never confirmed. Birds were recorded in suitable breeding habitat as follows: a pair at the mouth of the Jogatu Chay in June 1972, two pairs at Shur Gol in June 1971, two pairs at Lake Kobi in early August 1971, and a male at Dorgeh Sangi in June 1974. One or two pairs probably bred at Gori Gol in 1971 and 1973, and there were 30 birds at Akh Gol on 9 July 1974. A pair at Bamdej Marshes in Khuzestan on 6 June 1974 was unusual. The total population is unlikely to have exceeded 10 pairs.

**Eurasian Teal** *Anas crecca*: It is possible that a few pairs bred at wetlands in the Urumiyeh basin in Azarbaijan, but this was never confirmed. Counts of 78 and 75 were recorded during aerial surveys of the basin in June 1972 and June 1974, respectively, but most if not all of these birds were thought to be non-breeders. The few birds recorded in Golestan, Kordestan, Lorestan, Khuzestan and central Fars

during the summer months were also thought to be non-breeders.

**Mallard** *Anas platyrhynchos*: A fairly common breeding birds in Azarbaijan and at wetlands in the Zagros south to central Fars. Much the largest concentration was in the Urumiyeh basin, where there were an estimated 300–500 breeding pairs. Elsewhere in Azarbaijan, breeding was confirmed at Akh Gol (5 pairs), Nur Gol (5–10 pairs) and Gori Gol (5–10 pairs). Other breeding areas included Lake Zaribar, Kordestan (5–10 pairs), Hashelan wetland, Kermanshah (5–10 pairs), Cheghakor Marsh, Esfahan (<50 pairs), Gaharl Lake, Oshtrankuh, Lorestan (5–10 pairs) and the wetlands of central Fars (50–70 pairs). Small numbers of birds were recorded during the summer months at wetlands in Gilan, Mazandaran and Golestan, and some breeding may have occurred, but this was never confirmed. Occasional records of birds in Tehran, Khuzestan and Bushehr provinces during the summer months probably refer to non-breeding birds. The total breeding population was estimated at 500–800 pairs.

**Garganey** *Anas querquedula*: Probably a regular breeding bird in small numbers in the wetlands of the Urumiyeh basin, Azarbaijan, and at Lake Zaribar, Kordestan, although breeding was never confirmed. Twenty-one were observed in suitable breeding habitat at Ghara Gheshlaq and Lake Kobi in early July 1971, and totals of 178 and 211 were recorded during aerial surveys of the Urumiyeh basin in June 1972 and June 1974, respectively. At Lake Zaribar, there were 12 on 11 June 1972, 49 on 13 July 1974 and 15 on 3 June 1975. The few birds recorded in Mazandaran, Lorestan, Bushehr and Fars during the summer months were thought to be non-breeders.

**Northern Shoveler** *Anas clypeata*: Probably a regular breeding bird in small numbers in the wetlands of the Urumiyeh basin, Azarbaijan. Breeding was confirmed at Gordeh Git in 1975 (at least one brood of chicks), and 41 birds were recorded during an aerial survey of the basin in June 1972. The few birds recorded in Mazandaran, Golestan, Lorestan, Khuzestan and Fars during the summer months were thought to be non-breeders.

**Marbled Duck** *Marmaronetta angustirostris*: A common breeding bird in the wetlands of Khuzestan and central Fars, where the populations were roughly estimated at 500–1,000 pairs and 400–600 pairs, respectively. In Khuzestan, birds were widely scattered throughout the wetlands, and were even found breeding along irrigation ditches. Some important breeding areas included Shadegan Marshes (10+ pairs), Bamdej Marshes (20+ pairs), Dez Dam (10–20 pairs), marshes along the Dez River (20+

pairs), marshes along the Karkheh River (10+ pairs) and marshes near Shushtar (20+ pairs). In Fars, the main breeding sites were at Lake Parishan and Dasht-e Arjan (200–300 pairs in 1976 and 1977), Lake Tashk and Lake Bakhtegan (100+ pairs in 1970), Soltanabad Marshes (40–50 pairs in 1971) and Lake Maharlu (10+ pairs 1971). However, the situation was complicated by the presence of large numbers of non-breeding birds, especially during the very dry summer of 1971, when there were 1,180 birds at Lake Parishan, 470 at Lake Tashk and 200 at Haft Barm in June. There was also a small breeding population of about 35–55 pairs at wetlands in the Urumiyeh basin, Azarbaijan, especially Shur Gol, Yadegarlu and Dorgeh Sangi (10–15 pairs) and Ghara Gheshlaq (10–20 pairs). The species was found breeding at Akh Gol, Azarbaijan, in 1974 (two pairs with nine chicks) and in the Helleh Delta, Bushehr, in 1974 (15–20 pairs), and was possibly breeding at Hamoun-i Sabari, Seistan, in 1973 (a single bird in suitable breeding habitat on 4 June). The total population was estimated at between 1,000–2,000 pairs.

**Red-crested Pochard** *Netta rufina*: A scarce and irregular breeding bird. The only confirmed breeding record was at Lake Parishan, Fars, where there were 10 birds in June 1975 and about 100 birds in May 1976. The species may have bred at Anzali Mordab, Gilan, in 1971 (2 pairs on 9 May) and Hamoun-i Sabari, Seistan, in 1973 (one female on 4 June). One at Hashelan wetland, Kermanshah, on 29 August 1971, one in Miankaleh Wildlife Refuge, Mazandaran, on 10 July 1972, and four at Lake Alagol, Golestan on 9 May 1971 were thought to be non-breeders.

**Common Pochard** *Aythya ferina*: Probably only a scarce and irregular breeding bird. The only confirmed breeding record was at Akh Gol, Azarbaijan, in 1974 (18 adults with 7 chicks), but a few pairs probably bred at Gori Gol in 1971, 1972 and 1973, and also at wetlands in the Urumiyeh basin (Shur Gol, Yadegarlu, Dorgeh Sangi and Lake Kobi), where 96 were recorded during an aerial survey in June 1972. Breeding was also likely at Lake Zaribar, Kordestan, where there were 27 adults in June 1972 and 32 adults in July 1974. One or two pairs may have bred at Anzali Mordab, Gilan, in 1970, at Lapoo-Zargmarz Ab-bandans, Mazandaran, in 1971 and 1972, and at Lake Parishan, Fars, in 1971 and 1972. The total population is unlikely to have exceeded 50 pairs.

**Ferruginous Duck** *Aythya nyroca*: A fairly common and widespread breeding species, breeding in freshwater wetlands in Azarbaijan, Kordestan, Hamadan, Kermanshah, Lorestan, Khuzestan, Fars and Seistan, and probably also in the south Caspian

region. Found breeding at Gori Gol, (5–10 pairs), Lake Kobi (5–10 pairs), Yadegarlu and Dorgeh Sangi (5 pairs), Ghara Gheshlaq (5–10 pairs), Mahabad Dam (5 pairs) and marshes at the south end of Lake Urumiyeh (5–10 pairs), Azarbaijan, Lake Zaribar, Kordestan (20–50 pairs), Hashelan wetland, Kermanshah (5–10 pairs), Assadabad Plain, Hamadan (10–15 pairs), Pol-e Dokhtar Lake, Lorestan (several pairs in 1972), Dasht-e Arjan, Fars (5–10 pairs in 1972 and 1977), Lake Parishan, Fars (15–20 pairs), Lake Tashk, Fars (one pair in 1971), Shadegan Marshes, Khuzestan (1–2 pairs in 1974), and Hamoun-i Sabari, Seistan (5–10 pairs in 1973). Two or three pairs probably bred at Lapoo-Zargmarz Ab-bandans, Mazandaran, in 1971, 1972, 1973 and 1974, and the species possibly bred at Voshmimir Dam, Golestan, in 1975 (4 pairs on 1 August), but the only records in Gilan during the breeding season were single individuals at Amirkelayeh Lake on 8 May 1971 and Abbasabad Dam near Astara on 22–24 May 1976. The total population was estimated at 150–300 pairs.

**Tufted Duck** *Aythya fuligula*: Known to breed only at Gori Gol, Azarbaijan, where there five pairs in June 1971, 60 birds including juveniles in August 1972, and 80 birds in early September 1973. One or two pairs may have bred at Lake Kobi in 1972, 1973 and 1974, and 38 birds were present at this lake in early July 1975. One to three non-breeders were recorded during the summer months at Akh Gol, Nowruzlu Dam and Yadegarlu in Azarbaijan, Lake Zaribar in Kordestan, and Haft Barm in Fars.

**Water Rail** *Rallus aquaticus*: Probably breeding at suitable wetlands throughout northern and western Iran, although breeding was only proven at Galenow Marsh near Tehran in 1973 and 1975, and at Lake Maharlu, Fars, in 1974. Seen or heard calling in suitable breeding habitat at Hassanziadeh Ab-bandan in Gilan, Seyed Mohalli Ab-bandan in Mazandaran, Lake Zaribar in Kordestan, Hashelan wetland in Kermanshah, Dasht-e Arjan and Lake Parishan in Fars, and Helleh Delta in Bushehr. No attempt was made to estimate the size of the population.

**Baillon's Crake** *Porzana pusilla*: Known to breed only in the wetlands of central Fars. Breeding was proven at Dasht-e Arjan in June 1971, when eight adults and two small chicks were observed. At least six birds were present in the same area in May 1972. Single individuals were observed in suitable breeding habitat at Gumoon Marsh, Lake Tashk, in May 1972, Soltanabad Marshes in June 1971 and May 1972, and Lake Maharlu in May 1974 and April 1975. No attempt was made to estimate the size of the population.

**Spotted Crake** *Porzana porzana*: Possibly breeding at wetlands throughout northern and western Iran south to central Fars, but the situation was confused by passage migrants. Birds were heard calling in suitable breeding habitat in Miankaleh Wildlife Refuge, Mazandaran, in April and May 1973, at Galenow Marsh near Tehran in April 1974, and in a marsh near Shush, Khuzestan, in May 1972. No attempt was made to estimate the size of the breeding population.

**Purple Swampphen** *Porphyrio porphyrio*: In the 1970s, recorded only in Gilan, Khuzestan and Seistan. In 1970 and 1971, the Purple Swampphen was a common resident in the vast reed-beds of the Anzali Mordab and Siahkesheem complex, Gilan, and was also observed in small numbers at Amirkelayeh Lake. The population was thought to number several hundred pairs. However, this south Caspian population was almost totally eradicated by the exceptionally heavy snowfalls of late January/early February 1972, and the only subsequent record in Gilan was five birds at Siahkesheem on 27 November 1972. All records in Khuzestan came from the extensive reed-beds of Bamdej Marshes, where up to 11 were recorded during aerial surveys. The only record in Seistan was two birds in the marshes at the south end of the Hamoun-i Puzak on 18 January 1976. The Iranian portion of the Seistan basin dried out completely during the summer of 1971 and all habitats suitable for Purple Swampphens disappeared. The wetlands re-flooded in early 1972, but it took some years for tall marsh vegetation to recover. By 1976, the small portion of the Hamoun-i Puzak on the Iranian side of the border was once again suitable for swampphens which were presumably able to re-colonise the area from the extensive, permanent marshes on the Afghani side of the border.

**Common Moorhen** *Gallinula chloropus*: A fairly common breeding bird at wetlands in Gilan, Mazandaran, Golestan, Azarbaijan, Kordestan, Hamadan, Kermanshah, Lorestan, Khuzestan, central Fars and Seistan. Also found breeding at Galenow Marsh near Tehran and along the Zayandeh Rud in Esfahan. A few pairs probably bred along the Sarbarz River in Gandu (Bahu Kalat) Protected Area, Baluchestan, as small numbers were seen there in November 1970, March 1971 and October 1975. No attempt was made to estimate the size of the breeding population.

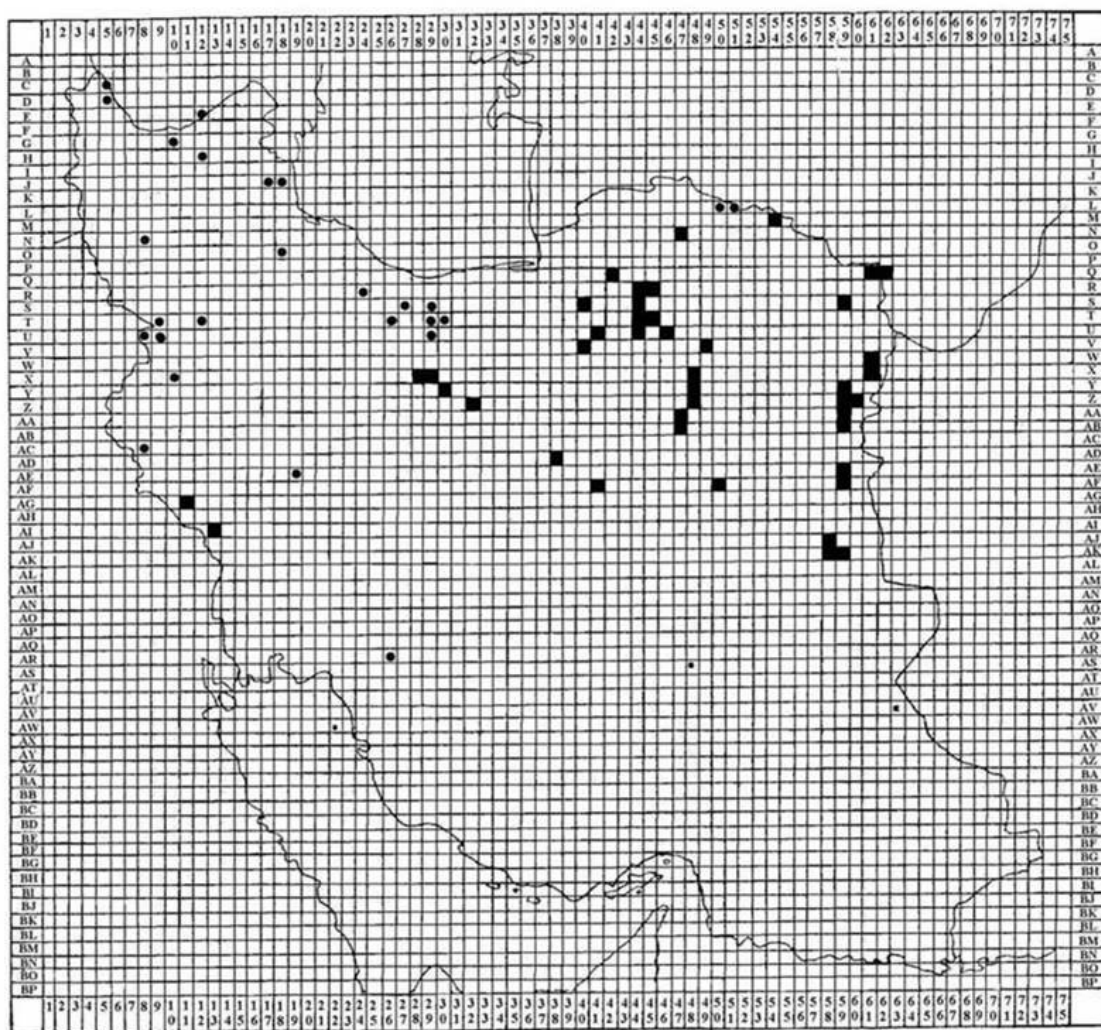
**Eurasian Coot** *Fulica atra*: A common breeding bird at wetlands in Gilan (100–200 pairs), Mazandaran (100–200 pairs), Golestan (50–100 pairs), Azarbaijan (2,000–3,000 pairs), Khuzestan (100–200 pairs), central Fars (250–500 pairs) and Seistan (100–200 pairs). Also found breeding at Lake

Zaribar, Kordestan (50–100 pairs), Assadabad Plain, Hamadan (1–2 pairs), Hashelan wetland, Kermanshah (20–30 pairs), Pole-e Dokhtar Lake, Lorestan (40–100 pairs), and Gandoman Marsh, Esfahan (50–100 pairs). The total population was estimated at 3,000–5,000 pairs.

**Crab Plover** *Dromas ardeola*: Thought to breed at a number of localities on the coast of the Persian Gulf and Baluchestan from southern Khuzestan to the Pakistan border. A colony of 1,500 pairs was found nesting in a small area of sand dunes on Ummal Karam Island, south of the Monde River Delta, in June 1975. Breeding was strongly suspected in the southern part of Shadegan Marshes in Khuzestan (10+ pairs), in Hara Protected Area in the Khouran Strait (20+ pairs), and at the mouth of the Sarbarz River in Gandu (Bahu Kalat) Protected Area, Baluchestan (2+ pairs). The total population was thought to be at least 2,000 pairs.

**Eurasian Oystercatcher** *Haematopus ostralegus*: Probably a regular breeding bird in small numbers along the major rivers entering Lake Urumiyeh, Azarbaijan, although proof of breeding (eggs or chicks) was never obtained. Aerial surveys of the Urumiyeh basin during the breeding season located 78 individuals in July 1971 (mostly near the mouth of the Jogatu Chay), four at the mouth of the Mahabad River in June 1972, and 35 in June 1974 (mostly along the Aji Chay south-west of Tabriz). Forty-seven birds were located during a ground survey of the wetlands to the south of Lake Urumiyeh in July 1975. These counts suggest a breeding population of about 20–40 pairs.

**Black-winged Stilt** *Himantopus himantopus*: A common breeding bird, occasionally occurring at very high densities, notably in the Urumiyeh basin, Azarbaijan, where there were 300–500 pairs on the shores of Lake Urumiyeh and about 100 pairs around wetlands on the plains to the south, in the Miankaleh Peninsula/Gorgan Bay area, Mazandaran (50–100 pairs), at coastal lagoons north of Gomishan, Golestan (250 pairs), and at many wetlands in Khuzestan, particularly Shadegan Marshes (60 pairs) and Bamdej Marshes (100–150 pairs). Other breeding sites included the Lake Alagol (50 pairs), Lake Ajigol (10 pairs), Lake Eymar (10 pairs) and Voshmigr Dam (5–10 pairs) in Golestan, Lake Parishan (10+ pairs), Lake Maharlu (25 pairs), Lake Tashk and Lake Bakhtegan (35 pairs), Soltanabad Marshes (5–10 pairs) and Zarghan and Lapuyee Marshes (15 pairs) in central Fars, Hamoun-i Sabari (100 pairs in 1973) in Seistan, and the Helleh Delta (25–50 pairs) in Bushehr. Also found breeding in smaller numbers or sporadically at other wetlands in northern and western Iran, including Ashkerabad Marshes near Tehran (10 pairs in 1977), Akh Gol, Azarbaijan (100–150 pairs in 1974), and



**Figure 2.** Breeding distribution of the Cream-coloured Courser *Cursorius cursor* and Common Sandpiper *Actitis hypoleucos* in Iran in the 1970s. Key to symbols: ■ – 25 km grid squares in which Cream-coloured Coursers were observed during the breeding season and were known or thought to be breeding; ● – 25 km grid squares in which Common Sandpipers were observed during the breeding season and were known or thought to be breeding.

Dasht-e Gaz, Kordestan (3 pairs in 1971). A few pairs may have nested at Bandar Kiashar Lagoon, Gilan, in 1972, Assadabad plain, Hamadan, in 1971, and Gharpuzabad Marshes, Tehran, in 1972. The total population was estimated at about 1,350–1,850 pairs.

**Pied Avocet** *Recurvirostra avosetta*: A very common breeding bird on the shores of Lake Urmieh, Azarbaijan (1,500–2,000 pairs), and breeding in much smaller numbers in Shadegan Marshes, Khuzestan (4–5 pairs in 1972 and 1974), Lake Tashk and Lake Bakhtegan, Fars (no more than 20 pairs in most years but 100–150 pairs in 1970), and the Helleh Delta, Bushehr (7 pairs in 1974).

**Stone Curlew** *Burhinus oedicnemus*: Apparently a widespread breeding species except in the central

desert basin, but the distribution was only sketchily known. Fairly common in the Urmieh basin (including the larger islands in Lake Urmieh), Azarbaijan, on Miankaleh Peninsula, Mazandaran, on the Turkoman Steppe, Golestan, and on the plains of Khuzestan. Also recorded in suitable habitat during the breeding season at Khosh Yeilagh and Touran Wildlife Refuges in Khorasan, near Tabriz and at Akh Gol in Azarbaijan, in Bijar Protected Area in Kordestan, near Darram in Zanjan, on Assadabad Plain in Hamadan, at Galenow Marshes near Tehran, at Lake Parishan in Fars, in the Helleh Delta and Monde River valley in Bushehr, at Mehruiyeh Wildlife Refuge, Lavan Island and Qeshm Island in Hormozegan, and in the Bampur Valley in Baluchestan. No attempt was made to estimate the size of the breeding population.

**Great Thick-knee** *Esacus recurvirostris*: A scarce resident along the coast of Hormozegan and Baluchestan from Hara Protected Area in the Khouran Strait to Govater Bay on the Pakistan border. There were records from the Gol River delta, islands in Hara Protected Area, north coast of Qeshm Island, Hormoz Island, Jask Creek and Rud-i Hara delta in Hormozegan, and at Chahbahar and the mouth of the Sarbarz River, Gandu (Bahu Kalat) Protected Area, in Baluchestan. The population was estimated at a minimum of 25 pairs, but could have been much higher, as long stretches of suitable coastline in eastern Hormozegan and Baluchestan were never properly surveyed.

**Cream-coloured Courser** *Cursorius cursor*: A fairly common breeding summer visitor to the desert margins of the Dasht-e Kavir and desert basins of eastern Khorasan, from Kavir National Park near Tehran east to Sarakhs in the valley of the Hari Rud and south to the region of Birjand in Khorasan (Fig. 2). Also recorded during the breeding season in the desert near Dehloran in north-western Khuzestan (20 adults and juveniles in June 1975). Observations of single birds and small parties elsewhere in Khuzestan, along the Gulf coast and in Seistan in March, October and November probably relate to passage migrants. No attempt was made to estimate the size of the breeding population.

**Collared Pratincole** *Glareola pratincola*: Loosely colonial, breeding in large numbers in the Miankaleh Peninsula/Gorgan Bay area (500–750 pairs), and in smaller numbers at Bandar Kiashar Lagoon in Gilan (20–30 pairs), at Larim Sara plains in Mazandaran (30–40 pairs), at Gomishan Lagoons (35 pairs), Lake Eymar (75 pairs) and other lakes on the Turkoman Steppe (40–90 pairs) in Golestan, on the shores of Lake Urumiyeh (50–100 pairs) and at Gordeh Git (50 pairs), Ghara Gheshlaq (25 pairs), Shur Gol, Yadegarlu and Dorgeh Sangi (50–80 pairs), Lake Kobi (50–100 pairs) and Miandoab (25 pairs) in Azarbaijan, at many wetlands in Khuzestan, particularly Bamdej Marshes (150–200 pairs), Shadegan Marshes (15+ pairs) and marshes along the Dez and Kharkeh rivers, at Lake Maharlu (a few pairs), Soltanabad Marshes (5–10 pairs) and Lake Parishan (30 pairs) in Fars, at Hamoun-i Sabari, Seistan (5–10 pairs), and in the Helleh Delta, Bushehr (25 pairs). A pair was seen by the Hari Rud south of Sarakhs, Khorasan, in June 1973, and two pairs were seen along the Aras River north of Arasbaran Protected Area, Azarbaijan, in July 1974. The total population was estimated at about 1,300–2,000 pairs.

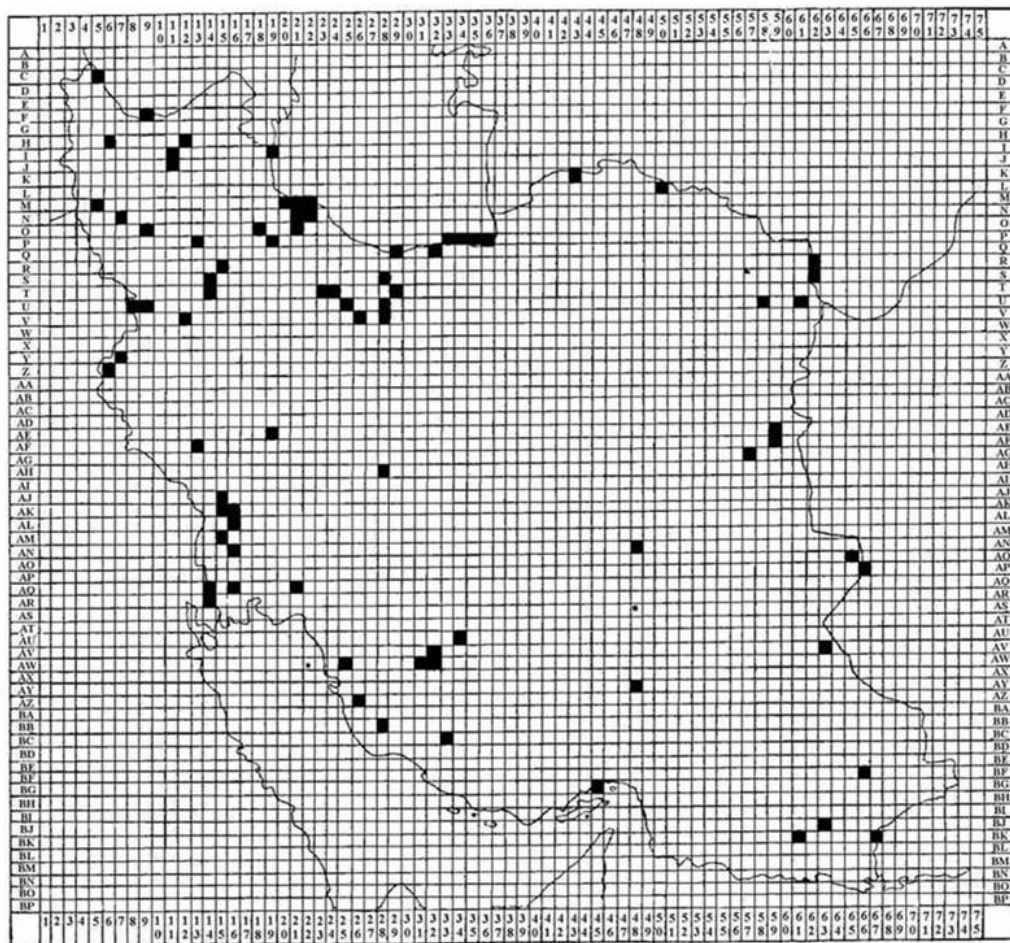
**Little Ringed Plover** *Charadrius dubius*: A common and widespread breeding summer visitor, occurring in

all major wetland areas and along permanent rivers and streams throughout the country (Fig. 3). Breeding birds arrived during the second half of February in the south of the country, and during the second half of March in the north. Most birds had left by the end of September, although a few lingered until late October and exceptionally early November. No attempt was made to estimate the size of the population.

**Kentish Plover** *Charadrius alexandrinus*: A common breeding bird along the Caspian and south coasts and at brackish to saline wetlands in Azarbaijan, Khuzestan, Fars and Seistan. In the south Caspian region, breeding in small numbers near Bandar Anzali, Gilan, and commonly in the Miankaleh/Gorgan Bay area (150–200 pairs), along the coast north of Gomishan, and at Lake Alagol on the Turkoman Steppe (100 pairs in 1972). In Azarbaijan, very common on the shores of Lake Urumiyeh (minimum of 250 pairs) and around brackish/saline lakes on the plains to the south, e.g. Shur Gol and Lake Kobi, and also found breeding at Akh Gol in 1974 (20–30 pairs). Common at brackish/saline wetlands in southern Khuzestan (Shadegan Marshes and Bandar-e Imam Khomeini area), Fars (Lake Maharlu [60 pairs], Lake Tashk, Lake Bakhtegan and Lake Parishan [20 pairs]) and Seistan (Hamoun-i Helmand and Hamoun-i Sabari). Fairly common in the delta of the Helleh Rud (40–50 pairs in June 1974) and along the entire south coast from southern Khuzestan to the Pakistan border, and found nesting on many of the islands (Khark, Kharku, Nakhilu, Morgu, Ummal Karam, Lavan, Sheedvar, Qeshm and Hormoz). Probably an irregular breeding bird at temporary brackish/saline lakes on the central plateau when conditions were suitable, and known to have bred at Gharpuzabad Marshes near Tehran in the past (S.H. Jervis Read, *in litt.*). No attempt was made to estimate the size of the population.

**Greater Sand Plover** *Charadrius leschenaultii*: A very scarce and perhaps irregular breeding bird, but status poorly known. The only confirmed breeding record in the 1970s was an adult with two juveniles on the steppe 41 km north-west of Tayebad, Khorasan, on 9 June 1973, but probably also bred in small numbers in Azarbaijan. Five birds were observed on the saline flats around Lake Urumiyeh in late June 1974, and one was seen on steppe south of Kalibar on 7 July 1974. According to S.H. Jervis Read (*in litt.*), a common breeding bird at Tuzlu Gol (Kavir Mighan) near Arak in 1957, and probably bred at Gharpuzabad Marshes near Tehran in 1957 and 1958. Possibly bred at Lake Maharlu, Fars, in 1965 (E.V. Thompson, *in litt.*). The form concerned, *columbinus*, is known to breed only in Turkey, Israel, Syria, Jordan, Iraq and Iran (Hirschfeld *et al.* 2000), and appears to be scarce everywhere.





**Figure 3.** Breeding distribution of the Little Ringed Plover *Charadrius dubius* in Iran in the 1970s. The black symbols indicate 25 km grid squares in which birds were observed during the breeding season and were known or thought to be breeding.

**Northern Lapwing** *Vanellus vanellus*: A common breeding bird in the wetlands of Azarbaijan, occurring in much smaller numbers south through Kordestan and Hamadan to Doh Tappeh plains in Kermanshah, and an occasional breeding bird at Dasht-e Arjan in Fars. The main breeding areas were around Lake Urumiyeh (500–1,000 pairs) and the lakes and marshes on the plains to the south (400–700 pairs). Also found breeding at Akh Gol (10–15 pairs) and Gori Gol (15–20 pairs) in Azarbaijan, Lake Zaribar (50+ pairs), Dasht-e Gaz (5–10 pairs) and Zarrineh Rud (15–30 pairs) in Kordestan, Assadabad Plain (20–30 pairs) in Hamadan, and Hashelan wetland (25+ pairs) and Doh Tappeh (one pair) in Kermanshah. Ten pairs nested at Dasht-e Arjan, Fars, in 1972, and a few pairs may have bred there in 1976. The population estimate of 1,000–2,000 pairs was considered to be a minimum as the species probably bred at many small marshes and areas of cultivation in Kordestan, Hamadan and Kermanshah not covered by the wetland surveys.

**Red-wattled Lapwing** *Vanellus indicus*: A fairly common and widespread resident throughout the lowlands of southern Iran from Qasr-e Shirin and Dasht-e Zohab near the Iraqi border in Kermanshah south-east through Lorestan (Pol-e Dokhtar Lake), Khuzestan, Bushehr, southern Fars (north to Lake Parishan and Lake Maharlou), Hormozgan, southern Kerman (north to Baft and Bam) and Baluchestan (north to Khash and Kuhak). Possibly also bred in very small numbers in the Seistan basin, as one was recorded at Hormak (north of Zahedan) on 29 March 1972, and one was seen by the Helmand River at Zahak on 2 June 1973. No attempt was made to estimate the size of the population, but given the very wide distribution of the species, there must have been at least several thousand pairs.

**White-tailed Lapwing** *Vanellus leucurus*: A fairly common breeding bird in the wetlands of Khuzestan (200–300 pairs) and central Fars (100–150 pairs). The main breeding areas were Shadegan Marshes (60+

pairs) and Bamdej Marshes (100+ pairs) in Khuzestan, and Lake Parishan (20+ pairs), Lakes Tashk and Bakhtegan (40+ pairs) and Lake Maharlu (25 pairs) in Fars. Also found breeding in the Helleh Delta, Bushehr (6 pairs in 1974), in the Seistan basin (5–10 pairs at Hamoun-i Sabari and several pairs at Hamoun-i Puzak in 1973), and on the Turkoman Steppe, Golestan (single pairs near Bandar Gaz, at Lake Ajigol and at Lake Eymar in 1972). The species formerly bred at Gharpuzabad Marshes near Tehran (10–12 pairs in 1957 and 1958; S.H. Jervis Read, *in litt.*), and possibly bred in Galenow Marshes near Tehran in 1976 and 1977. The total population was estimated at 300–500 pairs.

**Common Redshank** *Tringa totanus*: A very common breeding bird in the wetlands of the Urumiyeh basin, Azarbaijan, with 2,000–3,000 pairs in the marshes bordering Lake Urumiyeh and perhaps another 750 pairs on the marshy plains to the south. Also found breeding at Akh Gol (15–20 pairs), Nur Gol (10+ pairs) and Lake Gori (15–20 pairs) in Azarbaijan, Lake Zaribar (5–10 pairs), Dasht-e Gaz (5–10 pairs) and Sanandaj (1 pair) in Kordestan, Assadabad Plain (1 pair) in Hamadan, and Hashelan wetland (1–2 pairs) in Kermanshah. Small numbers also bred at Lake Tashk (10–20 pairs), Lake Maharlu (5–10 pairs) and Dasht-e Arjan (5 pairs) in central Fars. The total population was estimated at 3,000–4,000 pairs.

**Common Sandpiper** *Actitis hypoleucos*: A fairly common summer visitor to rivers and streams in the highlands of Azarbaijan, Alborz Mountains, Kopet Dag and Zagros Mountains south to the region of Yasuj (Fig. 2). Birds were recorded in suitable habitat during the breeding season at 26 localities as follows: Azarbaijan (6), Alborz Mountains (9), northern Khorasan (2), Zanzan (1), Kordestan (4), Kermanshah (1), Ilam (1), Lorestan (1) and Fars (1). Breeding was confirmed at the lakes in Oshtankuh Protected Area, Lorestan (5+ pairs in July 1974, nest found), and in the hills north of Sanandaj, Kordestan (adult with chick in July 1975). No attempt was made to estimate the size of the population.

**Armenian Gull** *Larus armenicus*: (In the 1970s, *Larus armenicus* was considered to be a subspecies of the Herring Gull *Larus argentatus*). A common breeding bird on islands in Lake Urumiyeh, Azarbaijan. Aerial surveys of the breeding colonies in 1971, 1972, 1973 and 1974 indicated a total population of 4,000–5,000 pairs. This species has a very restricted breeding range in Armenia, Georgia, eastern Turkey and north-western Iran, and a total population of only 69,000–75,000 individuals (Wetlands International 2006).

**Black-headed Gull** *Larus ridibundus*: A fairly common breeding bird in the Urumiyeh basin, Azarbaijan. Several small colonies totalling 200–500 pairs were located in marshes near the north-east shore of Lake Urumiyeh and around Lake Kobi, Shur Gol, Yadegarlu and Dorgeh Sangi on the plains to the south.

**Slender-billed Gull** *Larus genei*: A very common breeding bird at Lake Urumiyeh, Azarbaijan, where there were several large colonies on islets in the lake totalling 3,000–4,000 pairs. Breeding colonies were also found at Gomishan Lagoons, Golestan (50 pairs in 1972), Lake Alagol, Golestan (300–350 pairs in 1972), Shadegan Marshes, Khuzestan (400–800 pairs in 1972 and 1974), and Hamoun-i Sabari, Seistan (150–200 pairs in 1973). The species may have bred in small numbers at Tuzlu Gol (Kavir Mighan) near Arak in 1957 (S.H. Jervis Read, *in litt.*). The total population was estimated at 4,000–5,500 pairs.

**Gull-billed Tern** *Sterna nilotica*: A very local breeding species, found nesting in small colonies at Lake Urumiyeh, Azarbaijan (20–30 pairs), Gomishan Lagoons, Golestan (20 pairs), Hamoun-i Sabari, Seistan (5–10 pairs), Shadegan Marshes, Khuzestan (100–200 pairs), Helleh Delta, Bushehr (10–20 pairs), Bushire Bay (15–20 pairs), and Khouran Strait, Persian Gulf (10–20 pairs). About 20 pairs bred in the marshes at the west end of Gorgan Bay, Mazandaran, in 1972, and at least two pairs probably nested on Ummal Karam Island, Bushehr, in 1975. A few pairs bred at Tuzlu Gol (Kavir Mighan) near Arak in 1957 (S.H. Jervis Read, *in litt.*). The total population was estimated at 200–350 pairs.

**Caspian Tern** *Sterna caspia*: A very local breeding species, nesting in small numbers at Lake Urumiyeh, Azarbaijan (5–10 pairs), Shadegan Marshes, Khuzestan (15–20 pairs), Helleh Delta, Bushehr (5–10 pairs) and Ummal Karam Island, Bushehr (5–10 pairs). Several pairs probably bred at Hamoun-i Sabari, Seistan, in 1973. The total population was estimated at only 30–50 pairs.

**Lesser Crested Tern** *Sterna bengalensis*: A very common bird along the entire south coast from the region of Khark Island, Bushehr, to the Pakistan border in Baluchestan. Found breeding on Kharku Island (1,200 adults and nest scrapes in 1974), Nakhilu Island (1,000 pairs in 1975) and Sheedvar Island (1,000 adults and 10 nests in 1972; 40 adults and 10 nests in 1977). Probably bred at a number of other localities, as many offshore islands and sand bars suitable for breeding were never surveyed.

**Greater Crested Tern (Swift Tern)** *Sterna bergii*: A very common bird along the entire south coast from



the region of Khark Island, Bushehr, to the Pakistan border in Baluchestan. Found breeding on Nakhilu Island (40 pairs in 1975) and Sheedvar Island (30–40 adults and 1 nest in 1972; 100 adults and 4 nests in 1977). May have bred at Kharku in 1974 (6 adults) and 1977 (2 adults). Probably bred at a number of other localities, as many offshore islands and sand bars suitable for breeding were never surveyed.

**Sandwich Tern** *Sterna sandvicensis*: Small numbers of non-breeders were recorded in the Persian Gulf during the summer months, and it is possible that a few pairs occasionally nested. An adult was seen with Lesser Crested Terns on Kharku Island on 31 May 1974, and three adults and an immature were present on Ummal Karam Island on 16 June 1975.

**Common Tern** *Sterna hirundo*: Breeding in rather small numbers at wetlands in Azarbaijan, the south Caspian region, Khuzestan, Fars and Seistan. Breeding sites included Lake Urumiyeh, Azarbaijan (25–50 pairs), Lake Kobi, Azarbaijan (5–10 pairs), Anzali Mordab, Gilan (10+ pairs), Bandar Kiashar Lagoon, Gilan (15 pairs), Miankaleh Wildlife Refuge, Mazandaran (10–20 pairs), Gomishan Lagoons, Golestan (100–150 pairs), Shadegan Marshes, Khuzestan (60–100 pairs), Lake Parishan, Fars (5+ pairs), and Hamoun-i Sabari, Seistan (10 pairs). One or two pairs probably bred along the Aras River north of Arasbaran Protected Area and at Lake Gori, Shur Gol, Yadegarlu and Nowruzlu Dam in Azarbaijan, Voshmimir Dam in Golestan, Lake Zaribar in Kordestan, Lake Maharlu and Lake Tashk in Fars, and Hamoun-i Puzak in Seistan. A few pairs may have bred amongst the White-cheeked Terns on Ummal Karam Island, Bushehr, in 1975. The total population was estimated at 250–400 pairs.

**Little Tern** *Sterna albifrons*: A fairly common breeding bird, nesting in small to medium-sized colonies at brackish to saline wetlands in Azarbaijan, the south Caspian region, Khuzestan, Fars, Seistan and Bushehr. Colonies were located at Lake Urumiyeh, Azarbaijan (40–70 pairs), Shur Gol, Azarbaijan (10–20 pairs), Miankaleh Wildlife Refuge, Mazandaran (300–400 pairs), Gomishan Lagoons, Golestan (200–300 pairs), Voshmimir Dam, Golestan (40 pairs), Shadegan Marshes, Khuzestan (150–250 pairs), Bamdej Marshes, Khuzestan (15 pairs), Lake Parishan, Fars (10+ pairs), Lake Maharlu, Fars (10 pairs), Hamoun-i Sabari, Seistan (40–60 pairs), and Helleh Delta, Bushehr (40 pairs). A few pairs probably bred along the Aras River north of Arasbaran Protected Area and at Lake Kobi in Azarbaijan, at Lake Tashk and Lake Bakhtegan in Fars, along the Karun, Dez and Karkheh Rivers in Khuzestan, and at Hamoun-i Puzak in Seistan. At least one pair was breeding along the lower Monde River south-east of Bushire in June

1975. The total population was estimated at 900–1,300 pairs.

**Saunders's Tern (Saunders's Little Tern)** *Sterna saundersi*: Locally fairly common along the south coast from the region of Bushire to the Pakistan border. Small breeding colonies were located on islands in Bushire Bay (10–15 pairs), on the islands of Morghu (3+ pairs), Ummal Karam (5 pairs), Nakhilu (4 pairs) and Larak (100+ pairs), in the Khoran Strait, Hormozegan (10–20 pairs), on Hormoz Island (30 pairs) and at the mouth of the Sarbarz River, Baluchestan (10–15 pairs). Presumably bred at many other localities along the south coast which were never surveyed during the breeding season, and thus the estimate of 160–200 pairs is an absolute minimum.

**White-cheeked Tern** *Sterna repressa*: An abundant breeding bird in the Persian Gulf, with known colonies as follows: Kharku (1,500–2,500 pairs), Bushire Bay (50 pairs), Morghu (65 pairs), Ummal Karam (300 pairs), Nakhilu (170 pairs), Sheedvar (c. 300,000 pairs in 1972, but only 27,000–45,000 pairs in 1977), and Larak (many thousands of pairs). The total population was roughly estimated at a minimum of 100,000–300,000 pairs. However, the species was found nesting in large numbers on Farur in 1923, on Nabi Tunb in 1905 and 1923, and on Tunb in 1905 (Ticehurst *et al.* 1925). Permission was never obtained by personnel of the Department of the Environment to visit these islands during the 1970s, and it is possible that large numbers of terns continued to breed there. The catastrophic decline in numbers on Sheedvar Island between 1972 and 1977 was attributed to large-scale egg-collecting for local markets.

**Bridled Tern** *Sterna anaethetus*: An abundant breeding bird in the Persian Gulf, with known colonies as follows: Kharku (250–300 pairs), Morghu (5,500 pairs), Ummal Karam (1,000 pairs), Nakhilu (15,000 pairs), Sheedvar (3,000–5,000 pairs) and Larak (several hundred pairs). Found nesting in large numbers on Nabi Farur in 1923, and on Nabi Tunb in 1905 and 1923 (Ticehurst *et al.* 1925), but these islands were not surveyed by personnel of the Department of the Environment in the 1970s. The estimate of 25,000–27,000 pairs is, therefore, an absolute minimum.

**Whiskered Tern** *Chlidonias hybrida*: A common and locally abundant breeding bird at freshwater wetlands in Azarbaijan, the south Caspian region, Khuzestan and Seistan. The largest concentrations were in the Anzali Mordab complex, Gilan (2,000–4,000 pairs) and in the ab-bandans of eastern Mazandaran (1,000–2,000 pairs), particularly the Seyed Mohalli complex (150–200 pairs) and Lapoo-Zargmarz ab-bandans (100–150 pairs). Other breeding colonies were located

in the marshes around Lake Urumiyeh (100–200 pairs) and at Shur Gol, Yadegarlu and Dorgeh Sangi (50 pairs) in Azarbaijan, at Gomishan Lagoons (100 pairs), Lake Eymar (100 pairs), Lake Bibishervan (50 pairs) and Voshmigr Dam (15 pairs) in Golestan, at Shadegan Marshes (20–30 pairs) in Khuzestan, and at Hamoun-i Sabari (300–400 pairs) and Hamoun-i Puzak (50 pairs) in Seistan. The total population was estimated at about 4,000–7,000 pairs.

## DISCUSSION

Although personnel of the Department of the Environment have continued to carry out regular waterbird counts at wetlands throughout Iran during the mid-winter period, there have been no regular surveys of breeding waterbirds since the 1970s. Various surveys have been carried out during the breeding season at particular sites or for particular species, *e.g.* censuses of the breeding birds on Sheedvar Island in the Persian Gulf in 1981, 1982, 1990, 1997 and 2005 (Mansoori 1987; Amini & Vetr, unpubl. data; S.S. Zadegan, unpubl. data; N. Hamidi, unpubl. data), surveys of the breeding birds of Ajigol, Alagol and Ulmagol lakes in Golestan (Kaboli 2001) and Lake Tashk in Fars (Sehhatisabet *et al.* 2006), and censuses of breeding White Storks in 1985 and 1995 (Mansoori 1989, 1999). A major study was carried out on the wetlands of the Urumiyeh basin, Azarbaijan, in 2001 and 2002 (YEKOM Consulting Engineers 2002), but this contained little new information on numbers of breeding waterbirds, and relied heavily on waterbird data from the 1970s. Overall, the information on breeding waterbirds remains very fragmentary, and for most species it is not possible to determine whether the national populations have remained stable, increased or decreased over the past three decades.

For a number of species, recent work has revealed that there have been significant extensions in range since the 1970s, but it is not always clear whether or not these represent real increases in population or merely a redistribution of breeding birds. Great White Pelicans have been found breeding again at Lake Tashk in Fars (Sehhatisabet *et al.* 2006); Pygmy Cormorants have been found breeding in some numbers in Gilan (over 100 nests at Siahkesheem in 2001; Sehhatisabet 2006), and new colonies of Great Cormorants have been discovered in the south

Caspian region (M. Monavari, unpubl. data; A. Barati *per* A. Khaleghizadeh *in litt.* 2006). The Striated Heron seems to have become much commoner in the Khouran Strait in recent years (Bijan Darehshori, pers. comm. and pers. obs.), and Eurasian Spoonbills have been found breeding in mangroves in the Khouran Strait (N. Hamidi *in litt.* and pers. obs.). New breeding sites have been discovered for the White-headed Duck (Behrouzi-Rad 1994), and Ruddy Shelduck and Common Shelduck have been found breeding around lakes on the Turkoman Steppe, Golestan (Kaboli 2001). Of particular interest has been the discovery of one or two pairs of Common Cranes *Grus grus* breeding at Pir-Ahmad Kendi and Nawar, West Azarbaijan, in the 1990s (Ra'naghad *et al.* in press). The only record of a Common Crane during the breeding season in the 1970s was a single immature bird at Akh Gol, West Azarbaijan, on 9 July 1974 (pers. obs.). Purple Swamphens colonised the reed-beds at Lake Parishan in Fars during the 1980s, and at least 87 were present in January 1992 (Scott & Smart 1992), while the Spur-winged Lapwing *Vanellus spinosus* has been recorded in Khuzestan on several occasions in recent years, and may now be breeding in the province (Keijl *et al.* 2001; R. Aye, pers. comm.).

However, there have also been some losses. Most notably, the Greater Flamingo ceased to breed at Lake Urumiyeh in 1999, possibly because of an increase in salinity due to drought and water abstraction and high levels of human disturbance caused by harvesting of *Artemia* (YEKOM Consulting Engineers 2002). The Goliath Heron seems to have disappeared from the Khouran Strait since the 1970s. There have been no reports of this species in Hara Protected Area for many years (Bijan Darehshori, pers. comm.), and the only records in recent years have been in eastern Hormozegan, where three birds were observed during the mid-winter waterbird census in January 2004 (R. Felix, pers. comm.). The national censuses of White Storks in 1985 and 1995 have revealed a decline in the numbers of storks breeding in Iran since the 1970s (Mansoori 1989, 1999), and populations of many other species have probably suffered declines as wetlands continue to be degraded and destroyed. The wetlands in the Seistan basin have dried out completely on several occasions in recent decades because of a series of droughts and dam construction on the Helmand River in

Afghanistan. Many of the important wetlands on the plains to the south of Lake Urumiyeh have been drained for agriculture or converted to water storage reservoirs, while the ecology of Lake Urumiyeh itself has been radically altered by the construction of a causeway across the lake. The Soltanabad, Zarghan and Lapuyee marshes in central Fars had already been drained for agriculture by the late 1970s, and large parts of the Kamjan, Gumoon and Doshok marshes near Lake Tashk and Lake Bakhtegan have suffered a similar fate since then. In the south Caspian region, the sudden rise in level of the Caspian Sea between the late 1970s and early 1990s had a pronounced effect on the ecology of many of the coastal wetlands, especially Anzali Mordab and Gorgan Bay (Scott & Smart 1972), and this must have had a significant effect on the breeding bird fauna.

There is clearly a great need for further systematic surveys of the important breeding populations of waterbirds in Iran to identify, quantify and document the changes that have occurred in these populations since the 1970s. It is to be hoped that this summary of 1970s data, collected at a time when many of Iran's most important wetlands were still in a relatively pristine condition, will serve as valuable baseline information for future studies.

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**Appendix 1.** Status of wetlands mentioned in text. IBA = identified as an Important Bird Area (Evans 1994); WII = identified as a wetland of international importance (Scott 1995); PA = Protected Area; WR = Wildlife Refuge; NP = National Park.

Wetland	Province	Status
Abbasabad Dam	Gilan	IBA; WII.
Anzali Mordab (including Galugah, Siahkesheem and Selke)	Gilan	IBA; WII; Ramsar site; partly protected in Siahkesheem PA & Selke WR.
Bandar Kiashar Lagoon	Gilan	IBA; WII; Ramsar site.
Amirkelayeh Lake	Gilan	IBA; WII; Ramsar site; WR.
Seyed Mohalli Ab-bandan	Mazandaran	IBA; WII.
Larim Sara plains	Mazandaran	IBA; WII.
Lapoo-Zargmarz Ab-bandans	Mazandaran	IBA; WII; part of a Ramsar site
Miankaleh Peninsula/Gorgan Bay	Mazandaran	IBA; WII; part of a Ramsar site; WR.
Gomishan Lagoons	Golestan	IBA; WII.
Lake Alagol	Golestan	IBA; WII; part of Ramsar site.
Lake Ulmagol	Golestan	IBA; WII; part of Ramsar site.
Lake Ajigol	Golestan	IBA; WII; part of Ramsar site.
Voshmigur Dam	Golestan	IBA; WII.
Lake Bibishervan	Golestan	IBA; WII.
Lake Eymar	Golestan	IBA; WII.
Miandasht	Khorasan	WR.
Akh Gol	West Azarbaijan	IBA; WII.
Shur Gol (Hassanlu)	West Azarbaijan	IBA; WII; part of a Ramsar site.
Lake Yadegarlu	West Azarbaijan	IBA; WII; part of a Ramsar site.
Dorgeh Sangi Lake	West Azarbaijan	IBA; WII; part of a Ramsar site.
Ghara Gheshlaq Marshes	West Azarbaijan	IBA; WII.
Gordeh Git	West Azarbaijan	IBA; WII.
Lake Kobi	West Azarbaijan	IBA; WII; Ramsar site.
Nowruzlu Dam	West Azarbaijan	IBA; WII.
Mahabad Dam	West Azarbaijan	
Aras River	W & E Azarbaijan	
Lake Urumiyeh	W & E Azarbaijan	IBA; WII; Ramsar site; NP.
Lake Gori	East Azarbaijan	IBA; WII; Ramsar site.
Nur Gol (Neur Lake)	Ardabil	IBA; WII; in Lisar PA.
Lake Zaribar	Kordestan	IBA; WII.
Dasht-e Gaz	Kordestan	IBA.
Zarrineh Rud	Kordestan	
Assadabad plain	Hamadan	IBA.
Hashelan wetland	Kermanshah	IBA; WII.
Doh Tappeh plains	Kermanshah	Within Hashelan IBA.
Ravanzir Dam	Kermanshah	
Pol-e Dokhtar Lake (Jomjomeh)	Lorestan	
Gaharl Lake	Lorestan	Within IBA; within Oshtrankuh PA.
Ashkerabad Marshes	Tehran	
Galenow Marshes	Tehran	
Gharpuzabad Marshes	Qazvin	Drained in 1970s.
Tuzlu Gol (Kavir Mighan)	Central (Markazi)	
Zayandeh Rud	Esfahan	
Cheghakhor (Chogakhor) Marsh	Chaharmahal and Bakhtiari	IBA; WII.
Gandoman Marsh	Chaharmahal and Bakhtiari	IBA; WII.
Lake Bakhtegan (and Doshok)	Fars	IBA; WII; Ramsar site; within NP & WR.
Lake Tashk (and Gumoon)	Fars	IBA; WII; Ramsar site; within NP & WR.
Kamjan Marshes	Fars	Within Bakhtegan IBA; WII.
Zarghan & Lapuyee Marshes	Fars	Drained in 1970s.
Lake Maharlu	Fars	IBA; WII.

Wetland	Province	Status
Soltanabad Marshes	Fars	Drained in 1970s.
Haft Barm Lakes	Fars	IBA; WII.
Dasht-e Arjan	Fars	IBA; WII; Ramsar site; within PA.
Lake Parishan	Fars	IBA; WII; Ramsar site; within PA.
Dez River marshes	Khuzestan	IBA; WII; partly in WR & PA.
Karkheh River marshes	Khuzestan	IBA; WII; partly in WR & PA.
Karun River marshes	Khuzestan	IBA; WII.
Hamidieh (Omidiyeh) Lake	Khuzestan	IBA; WII.
Bamdej Marsh (Sadi Shavour)	Khuzestan	IBA; WII.
Shadegan Marshes	Khuzestan	IBA; WII; Ramsar site; WR.
Bandar-e Imam Khomeini marshes	Khuzestan	IBA; WII; Ramsar site; partly in WR.
Izeh and Shiekho Lakes	Khuzestan	IBA; WII.
Khark Island	Bushehr	
Kharku Island	Bushehr	IBA; WII; WR.
Helleh Delta	Bushehr	IBA; WII; PA.
Bushire Bay	Bushehr	IBA; WII.
Lower Monde River	Bushehr	IBA; WII; PA.
Nakhilu Island	Bushehr	IBA; WII.
Morghu Island	Bushehr	IBA; WII.
Ummal Karam Island	Bushehr	IBA; WII.
Lavan Island	Hormozegan	
Sheedvar Island	Hormozegan	IBA; WII; WR.
Khouran Strait	Hormozegan	IBA; WII; part Ramsar site; partly in PA.
Gol River delta	Hormozegan	IBA; WII; part Ramsar site.
Hara Protected Area	Hormozegan	IBA; WII; Ramsar site; PA.
Qeshm Island (north coast)	Hormozegan	IBA; WII; part Ramsar site; partly in PA.
Hormoz Island	Hormozegan	IBA.
Larak Island	Hormozegan	
Farur & Nabi Farur Islands	Hormozegan	IBA; WII; PA.
Tunb & Nabi Tunb Islands	Hormozegan	
Deltas of Rud-i-Gaz & Rud-i-Hara	Hormozegan	IBA; WII; Ramsar site; PA.
Jask Creek	Hormozegan	IBA; WII; PA.
Deltas of Rud-i Jagin and Gabrik	Hormozegan	IBA; WII; PA.
Hamoun-i Sabari	Seistan & Baluch.	IBA; WII; Ramsar site; partly in PA.
Hamoun-i Hirmand (Helmand)	Seistan & Baluch.	IBA; WII; Ramsar site; partly in PA.
Hamoun-i Puzak	Seistan & Baluch.	IBA; WII; Ramsar site; in PA.
Chahbahar Bay	Seistan & Baluch,	IBA; WII.
Lower Sarbarz River	Seistan & Baluch.	IBA; WII; in Gandu (Bahu Kalat) PA.
Govater Bay	Seistan & Baluch.	IBA; WII; in Gandu (Bahu Kalat) PA.

