

**THE BIRDS OF SHADEGAN MARSHES
AND ADJACENT TIDAL MUDFLATS,
ISLAMIC REPUBLIC OF IRAN**

**The Results of Surveys carried out by the Ornithology Unit of the Department of the
Environment in the 1970s**

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INTRODUCTION

The wetlands of Khuzestan appear to have been almost completely unknown, ornithologically, until the late 1960s. David A. Ferguson, then a Peace Corps Volunteer with the Iran Game and Fish Department, paid a brief visit to the wetlands in November 1968, and recorded a total of 4,600 Anatidae and Coots *Fulica atra*. Unfortunately, the details of this survey are not available. In February 1971, following an International Conference on the Conservation of Wetlands and Waterfowl held in Ramsar, Iran, the Game and Fish department (later to become the Department of the Environment) mounted an expedition to survey wetlands throughout Khuzestan Province. The participants included the author and Ali Adhami from the Game and Fish Department, and Erik Carp, at that time Administrator of the International Waterfowl Research Bureau (IWRB). Despite inclement weather, the expedition recorded almost 60,000 ducks and over 4,000 geese in the province, and established the immense importance of Shadegan Marshes as a wintering area for a large proportion of the world population of the globally threatened Marbled Teal *Marmaronetta angustirostris*. The results of this survey were published in the Proceedings of the Ramsar Conference (Scott & Carp 1972) and also in the IWRB Bulletin (Carp 1972).

Further surveys of Shadegan Marshes were carried out in January 1972 and May 1972, and in July 1972, the author submitted a proposal to the Department of the Environment for the establishment of a Waterfowl Refuge at Shadegan Marshes (Scott 1972). Rapid action was taken by the Department, and a Waterfowl Refuge of 296,000 ha, encompassing all the main marshes and the coastal mudflats to the south, was established later that year. The central and southern portions of the marshes and the mudflats of Khor-al Amaya and Khor Musa (a total of 400,000 ha) were designated as a Ramsar Site on 23 June 1975. In the following year, Harrington (1976) proposed that several of the islands between the Arvand River and Cape Bahrgan in the southeast should be included within the Wildlife Refuge, but it seems that no action was taken on this proposal.

A general account of Shadegan Marshes is given in the proposal for the establishment of the Wildlife Refuge (Scott 1972), and also in the site accounts in *A Directory of Western Palearctic Wetlands* (Carp 1980), *Important Bird Areas in the Middle East* (Evans 1994) and *A Directory of Wetlands in the Middle East* (Scott 1995). Much of this information is summarised in the relevant *Information Sheet on Ramsar Wetlands*, available from the Ramsar Convention Bureau.

The purpose of the present report is to provide additional information on the avifauna of Shadegan Marshes and the adjacent tidal mudflats, based on surveys carried out by the author and other personnel of the Ornithology Unit of the Department of the Environment during the period 1971 to 1978. Much of the detailed information on bird numbers and distribution acquired during these surveys has never been published, and remains unavailable to the scientific community at large. Several internal reports (Project Completion Reports) were produced by the Ornithology Unit during the 1970s, but these focused primarily on waterbirds, and did not include any detailed account of other bird species recorded during the surveys. Project Completion Reports of particular relevance to Shadegan Marshes include the proposal by the author (Scott 1972) and a report on a survey in August 1972 by Alireza Eftakhar (Eftakhar 1972). Copies of these two reports are appended to this report.

SURVEY WORK

Mid-winter wildfowl counts were undertaken throughout the wetlands of Khuzestan in every winter from 1970/71 to 1977/78 inclusive. The totals for the whole of the province are given in Table 1 and the totals for Shadegan Marshes in Table 2. Unfortunately, the breakdown by site is not available for the year 1977/78. In two winters, 1973/74 and 1974/75, the mid-winter counts included aerial surveys by the author and Fred A. Harrington Jr., the senior biologist at the Department of the Environment and pilot of the Department's light aircraft. These aerial surveys permitted the first ever coverage of the vast and largely inaccessible mudflats to the south of Shadegan Marshes, and led to the discovery of large numbers of wintering shorebirds, gulls and terns, notably Eurasian Oystercatcher *Haematopus ostralegus*, Bar-tailed Godwit *Limosa lapponica*, Eurasian Curlew *Numenius arquata*, Common Redshank *Tringa totanus*, Yellow-legged Gull *Larus cachinnans*, Black-headed Gull *Larus ridibundus* and Gull-billed Tern *Gelochelidon nilotica*. In the winter of 1973/74, the water level in Shadegan Marshes was unusually low, and relatively few waterfowl were observed, despite the excellent coverage. However, in January 1975, water levels were back to normal, and huge numbers of waterfowl were present, including over 800,000 Anatidae.

The Department of the Environment's nation-wide waterfowl counts were undertaken by a number of personnel of the Ornithology Unit, and were confined to counts of pelicans, flamingos, ducks, geese, swans, cranes and coots. On several occasions, however, the counts were undertaken by the author and/or visiting ornithologists, and in these cases, the numbers of all species of waterbirds were recorded, along with details of all other birds observed. This was the case in February 1971, January 1972, January 1973, January 1974 and January 1975. The results of these more extensive waterbird counts are given in Table 3.

The marshes were also surveyed in November 1973, as part of the Department's nation-wide programme of mid-November waterfowl counts, but as the wetlands of Khuzestan were largely dry and almost devoid of wildfowl (Anatidae) at this time of year, no further mid-November counts were undertaken in the province. The results of the November 1973 survey are included in Table 3. Breeding bird surveys were carried out by the author in May 1972 and June 1974, and by Alireza Eftekhar in August 1972. The results of these three surveys are summarised in Table 4. In addition, some waterfowl counts were carried out in the southern part of the marshes in early March 1972 by Mike Smart, at that time working for the British Council in Tehran.

A summary of the surveys carried out by personnel of the Department of the Environment and visiting ornithologists in Shadegan Marshes during the period 1971 – 1978 is given in Table 5. The following systematic list of the birds of Shadegan Marshes and adjacent tidal mudflats has been compiled on the basis of the information derived from these surveys.

**SYSTEMATIC LIST OF THE BIRDS
OF SHADEGAN MARSHES
AND ADJACENT TIDAL MUDFLATS,
ISLAMIC REPUBLIC OF IRAN**

(Based on surveys carried out in the 1970s)

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The sequence and composition of families follow Morony, Bock & Farrand (1975) *Reference List of the Birds of the World*. The sequence and treatment of species within families and the scientific nomenclature follow Sibley and Monroe (1990) *Distribution and Taxonomy of Birds of the World*.

Little Grebe *Tachybaptus ruficollis*: Probably a fairly common resident, recorded in the marshes in May 1972 and found wintering on a gravel pit in the suburbs of Abadan (70 on 14 November 1973; 10 on 24 January 1974).

Great Crested Grebe *Podiceps cristatus*: Probably a scarce breeding summer visitor to the marshes. A pair was recorded on 4 June 1974.

Black-necked Grebe *Podiceps nigricollis*: A scarce winter visitor. One was recorded on 16 February 1971.

Great White Pelican *Pelecanus onocrotalus*: A scarce passage migrant and winter visitor. Up to 17 were recorded in winter, and one was present on 13 May 1972.

Dalmatian Pelican *Pelecanus crispus*: Present year round, and breeding in small numbers. A nest with two chicks was located in the southern marshes on 18 January 1975. The maximum count in winter was 18 (in January 1975), but 75 unidentified pelicans in January 1973 were probably this species. Thirty-four were recorded in May 1972 and 61 in June 1974.

Great Cormorant *Phalacrocorax carbo*: A fairly common winter visitor (maximum 27), with some non-breeding birds remaining throughout the summer, *e.g.* eight on 4 June 1974.

Little Egret *Egretta garzetta*: A common passage migrant and winter visitor, with 186 present in May 1972, 43 in August 1972, and up to 42 in winter.

Western Reef Egret *Egretta gularis*: Present year round, breeding in saline marshes in the south of the reserve. A colony of about 40 pairs was located in June 1974.

Grey Heron *Ardea cinerea*: A very common winter visitor (maximum 666), with small numbers of non-breeders remaining throughout the summer, *e.g.* 42 in June 1974.

Purple Heron *Ardea purpurea*: A common breeding summer visitor to the marshes, where there were an estimated 30 pairs, and also present in small numbers throughout the winter (maximum 13 in January 1973).

Great Egret *Casmerodius albus*: A common winter visitor (maximum 172), with small numbers of non-breeders remaining throughout the summer (11 in May 1972 and four in June 1974).

Cattle Egret *Bubulcus ibis*: Only one record: a single bird in the marshes in May 1972. This was a fairly common breeding bird in the marshes further north in Khuzestan.

Squacco Heron *Ardeola ralloides*: A common passage migrant and summer visitor to the marshes, where breeding was suspected. Sixty-five were present in May 1972 and 10 in June 1974. There was only one record in winter: a single bird on 23 January 1974.

Black-crowned Night Heron *Nycticorax nycticorax*: Only one record in the marshes: a single bird on 4 June 1974. This species winters quite commonly at wetlands further north in Khuzestan, and was recorded on one occasion at a pond in Abadan (one on 16 February 1971).

Little Bittern *Ixobrychus minutus*: Probably a fairly common breeding summer visitor, although there were only two records: a single bird in May 1972 and two individuals in August 1972.

Great Bittern *Botaurus stellaris*: Probably a fairly common resident in the marshes, with up to six heard booming in May 1972 and June 1974.

White Stork *Ciconia ciconia*: A very common winter visitor to the marshes (maximum 1,343 in January 1973), and also present in summer (27 in May 1972 and nine in June 1974), with the odd pair breeding in nearby villages.

Glossy Ibis *Plegadis falcinellus*: A scarce passage migrant and winter visitor. Singles were recorded on 24 August 1972 and 16 January 1975.

Sacred Ibis *Threskiornis aethiopicus*: Status uncertain. Possibly a regular winter visitor in small numbers, although there was only one winter record: a single bird in January 1973. Two groups of four birds, including a juvenile, were observed in the marshes on 13/14 May 1972, and it is possible that the birds were breeding locally. This species was a regular winter visitor in small numbers to wetlands further north in Khuzestan, presumably from breeding areas in the Mesopotamian Marshes in Iraq.

Eurasian Spoonbill *Platalea leucorodia*: A fairly common winter visitor (maximum 85 in January 1973) and passage migrant (a flock of 43 in May 1972). Five immatures were present on 4 June 1974.

Greater Flamingo *Phoenicopterus ruber*: A common non-breeding visitor, with numbers fluctuating widely according to water levels. The highest count in winter was 1,480 in January 1974; 2,890 were present in May 1972, and 985 in June 1974.

Greylag Goose *Anser anser*: A very common winter visitor (maximum 2,082 in January 1972).

Ruddy Shelduck *Tadorna ferruginea*: An irregular winter visitor. Four in May 1972, six in January 1974 and 200 in January 1976 were the only records. This is a common winter visitor to wetlands further north in Khuzestan.

Common Shelduck *Tadorna tadorna*: An irregular winter visitor in small numbers (maximum 79 in January 1973).

Eurasian Wigeon *Anas penelope*: A very common winter visitor (maximum 9,050 in January 1975).

Gadwall *Anas strepera*: A very common winter visitor (maximum 9,050 in January 1975).

Common Teal *Anas crecca*: An abundant winter visitor (maximum 348,325 in January 1975).

Mallard *Anas platyrhynchos*: A very common winter visitor (maximum 4,800 in January 1977).

Northern Pintail *Anas acuta*: An abundant winter visitor (maximum 237,150 in January 1975).

Garganey *Anas querquedula*: A very common passage migrant: 61 in mid-February 1971, 15,000 on 3 March 1972, 5,000 on 9 March 1972, and 36 in late August 1972.

Northern Shoveler *Anas clypeata*: A very common winter visitor (maximum 16,975 in January 1975).

Marbled Teal *Marmaronetta angustirostris*: An abundant winter visitor and fairly common breeding bird. Mid-winter counts were as follows: 12,622 in February 1971; 10,000 in January 1972; 19,979 in January 1973; 3,037 in January 1974; and 5,003 in January 1975. The apparent absence of birds in January 1976 and January 1977 is more likely to have been a result of inadequacies in coverage than a genuine lack of birds. Small numbers were recorded during the breeding season in May 1972 (four birds) and June 1974 (10 birds), and it was thought that the birds were breeding in the marshes.

Red-crested Pochard *Netta rufina*: Probably only a scarce passage migrant. Eighteen were recorded on 9 March 1972.

Common Pochard *Aythya ferina*: A rather scarce and irregular winter visitor to the marshes (maximum 106 in January 1972), but regular on the nearby Abadan Gravel Pit, where there were 180 in January 1972, 850 in November 1973, and 135 in January 1974.

Ferruginous Duck *Aythya nyroca*: A scarce and irregular winter visitor to the marshes (maximum 10 in January 1974) and probably also a scarce breeding bird (a pair in June 1974 were thought to be nesting). Three were recorded at Abadan Gravel Pit on 14 November 1973.

Tufted Duck *Aythya fuligula*: A very scarce winter visitor to the marshes (maximum two), but regular at the nearby Abadan Gravel Pit, where there were 40 in January 1972, 140 in November 1973, 1,170 in January 1974 and 11 in January 1975.

Osprey *Pandion haliaetus*: A winter visitor in small numbers: two on 7 January 1972, one on 15 November 1973, and one on 17 February 1975.

Black Kite *Milvus migrans*: A fairly common winter visitor to the marshes, e.g. 20 in mid-February 1971 and 30 on 23 January 1974. A concentration of 350 was recorded in the Abadan area in mid-February 1971.

White-tailed Eagle *Haliaeetus albicilla*: A scarce winter visitor. One adult and two immatures were recorded during the aerial survey on 16 January 1975.

Egyptian Vulture *Neophron percnopterus*: Two migrants on 24 August 1972.

Western Marsh Harrier *Circus aeruginosus*: A very common resident in the marshes. High counts included 13 on 17 February 1971, 70 on 7/8 January 1972, 55 on 13/14 May 1972, 38 on 4 June 1974 and 20 on 16 January 1975.

Hen Harrier *Circus cyaneus*: One on 7 January 1972.

Pallid Harrier *Circus macrourus*: A fairly common winter visitor: three in February 1971, two in January 1972, two in November 1973, and one in January 1975.

Eurasian Sparrowhawk *Accipiter nisus*: One near the southwest corner of the marshes on 24 January 1974.

Common Buzzard *Buteo buteo*: A migrant Steppe Buzzard *B. b. vulpinus* was recorded in March 1972.

Long-legged Buzzard *Buteo rufinus*: Four on 16 February 1971. This is a common winter visitor to the plains of Khuzestan.

Greater Spotted Eagle *Aquila clanga*: A regular winter visitor in small numbers: one on 17 February 1971, two on 8 January 1972, eight on 14/15 November 1973 and two on 16 January 1975.

Steppe Eagle *Aquila nipalensis*: A scarce winter visitor: two on 16/17 February 1971 and one on 8 January 1972.

Imperial Eagle *Aquila heliaca*: A fairly common winter visitor to the marshes: six on 17 February 1971, 15 on 7/8 January 1972, 19 on 14/15 November 1973, one on 23 January 1974, and one on 16 January 1975. The wetlands of Khuzestan were a very important wintering area for this species.

Eurasian Kestrel *Falco tinnunculus*: A very common winter visitor, with up to 30 being recorded in a day.

Merlin *Falco columbarius*: A male in the marshes on 16 January 1975.

Saker Falcon *Falco cherrug*: A scarce winter visitor: singles on 17 February 1971 and 8 January 1972.

Peregrine Falcon *Falco peregrinus*: Two adults on 15 November 1973 were presumably on passage.

Black Francolin *Francolinus francolinus*: One recorded in the marshes on 23 August 1972. This is a common resident in riverine thickets, scrub and date gardens throughout the plains of Khuzestan.

Water Rail *Rallus aquaticus*: Probably a regular winter visitor, although the only record was of a single bird in the marshes near Abadan.

Common Moorhen *Gallinula chloropus*: Probably a scarce resident, although the only record was of a bird in the northern marshes on 14 November 1973. The species was a fairly common breeding bird in wetlands elsewhere in Khuzestan.

Eurasian Coot *Fulica atra*: A common winter visitor in widely fluctuating numbers according to water levels (maximum 12,190 in January 1974). Small numbers were present in the marshes in May 1972 and June 1974, and were thought to be breeding.

Crab Plover *Dromas ardeola*: Probably a breeding summer visitor to small islands and tidal creeks to the south of the marshes. A pair and a single bird were seen in suitable breeding habitat near Bandar-e Shahpur on 3 June 1974. Eleven were recorded along the coast of southeastern Khuzestan in January 1974.

Eurasian Oystercatcher *Haematopus ostralegus*: A very common winter visitor to the tidal mudflats to the south of the marshes (maximum 1,820 in January 1974).

Black-winged Stilt *Himantopus himantopus*: A common resident, with an estimated 60 pairs breeding in the marshes and up to 800 present in mid-winter.

Pied Avocet *Recurvirostra avosetta*: An irregular winter visitor (maximum 71 in January 1974), a passage migrant (172 in August 1972), and a rather scarce breeding bird (four pairs located in May 1972).

Stone Curlew *Burhinus oedicnemus*: Probably a breeding summer visitor to the drier areas around the marshes. One was recorded in suitable breeding habitat on 4 June 1974.

Collared Pratincole *Glareola pratincola*: A breeding summer visitor to the marshes, where there were about 15 pairs.

Grey Plover *Pluvialis squatarola*: A passage migrant and winter visitor in small numbers (maximum 13 in June 1974).

Common Ringed Plover *Charadrius hiaticula*: A fairly common passage migrant and winter visitor (maximum 65 in May 1972).

Little Ringed Plover *Charadrius dubius*: Four early migrants in the marshes on 17 February 1971. A wintering bird was present at Abadan Gravel Pit on 17 January 1975.

Kentish Plover *Charadrius alexandrinus*: A fairly common resident, breeding on the mudflats. The highest counts were 50 in winter and 74 in summer.

Greater Sand Plover *Charadrius leschenaultii*: A fairly common winter visitor to the tidal mudflats to the south of the marshes (maximum 25 in February 1971). Two migrants were observed in the marshes on 14 November 1973.

Eurasian Dotterel *Eudromias morinellus*: A flock of 44 on the plains to the north of the marshes on 7 January 1972. This species is a regular winter visitor to the arid plains of Khuzestan.

Northern Lapwing *Vanellus vanellus*: A common winter visitor to the marshes (maximum 600).

Red-wattled Lapwing *Vanellus indicus*: A fairly common resident, breeding in the drier areas of the marshes (maximum 20 in May 1972).

White-tailed Lapwing *Vanellus leucurus*: A common breeding resident and winter visitor. The breeding population was estimated at about 60 pairs, and up to 320 were recorded in winter.

Common Snipe *Gallinago gallinago*: Probably a common passage migrant and winter visitor, although the maximum count was only 10.

Black-tailed Godwit *Limosa limosa*: A common winter visitor to the marshes (maximum 750).

Bar-tailed Godwit *Limosa lapponica*: A very common winter visitor to the tidal mudflats to the south of the marshes (maximum 2,120 in January 1974).

Eurasian Curlew *Numenius arquata*: A very common winter visitor to the tidal mudflats to the south of the marshes (maximum 956 in January 1974); also recorded in small numbers in the marshes, where a few non-breeders apparently remained throughout the summer.

Spotted Redshank *Tringa erythropus*: A fairly common winter visitor (maximum 22 in January 1972).

Common Redshank *Tringa totanus*: A very common winter visitor to the marshes and tidal mudflats (maximum 1,260 in January 1974).

Marsh Sandpiper *Tringa stagnatilis*: A fairly common winter visitor to the marshes (maximum 20 in January 1970).

Common Greenshank *Tringa nebularia*: A fairly common winter visitor to the marshes (maximum 11 in January 1972).

Green Sandpiper *Tringa ochropus*: A winter visitor to the marshes in small numbers (maximum four in January 1973).

Wood Sandpiper *Tringa glareola*: A common passage migrant (84 in May 1972), and also recorded once in mid-winter (one in January 1975).

Terek Sandpiper *Tringa cinerea*: Probably a common winter visitor to the mudflats in the south; 70 were recorded during the aerial survey on 25 January 1974.

Common Sandpiper *Tringa hypoleucos*: A passage migrant in small numbers, recorded in May 1972 and August 1972.

Ruddy Turnstone *Arenaria interpres*: A passage migrant in small numbers; 14 on 13/14 May 1972 and 10 on 4 June 1974.

Sanderling *Calidris alba*: Three migrants in the marshes on 13/14 May 1972.

Little Stint *Calidris minuta*: A common passage migrant and winter visitor (maximum 170 on 13/14 May 1972).

Temminck's Stint *Calidris temminckii*: Probably a regular passage migrant and winter visitor in small numbers; three on 7 January 1972 and three on 14 November 1973.

Dunlin *Calidris alpina*: A common winter visitor to the marshes (maximum 350 in January 1972). A party of 10 late migrants on 4 June 1974.

Curlew Sandpiper *Calidris ferruginea*: A common passage migrant; 385 on 13/14 June 1972 and 122 on 4 June 1974.

Ruff *Philomachus pugnax*: A common passage migrant (70 in mid-February 1972 and 355 in mid-May 1972); also over-wintering in some years (14 in January 1974).

Red-necked Phalarope *Phalaropus lobatus*: A passage migrant; 15 in the creeks near Bandar-e Shahpur on 13 May 1972, and 20 in the marshes on 4 June 1974.

Common Gull *Larus canus*: A fairly common winter visitor to the marshes (maximum 90 on 8 January 1972).

Yellow-legged Gull *Larus cachinnans*: A very common winter visitor to the tidal mudflats and to a much lesser extent the marshes (maximum 830 in January 1975). An immature was present in the marshes on 4 June 1974.

Lesser Black-backed Gull *Larus fuscus*: A scarce winter visitor to the tidal mudflats; four in January 1974 and three in January 1975.

Great Black-headed Gull *Larus ichthyaetus*: A scarce and irregular winter visitor to the marshes. Seven were recorded in January 1973 and five in January 1974.

Black-headed Gull *Larus ridibundus*: An abundant winter visitor to the tidal mudflats and marshes (maximum 12,200 in January 1974), with non-breeders lingering until May.

Slender-billed Gull *Larus genei*: A common breeding bird in the marshes, where there were colonies of 700-800 pairs in 1972 and 400-500 pairs in 1974. Also present in much smaller numbers throughout the winter (maximum 66 in January 1973).

Whiskered Tern *Chlidonias hybridus*: A rather scarce breeding bird in the marshes (20-30 pairs in 1972), and a common winter visitor (maximum 291 in January 1973).

White-winged Black Tern *Chlidonias leucopterus*: A common passage migrant (306 on 13/14 May 1972). Two birds were recorded at Abadan Gravel Pit on 7 January 1972.

Gull-billed Tern *Sterna nilotica*: A common breeding bird in the marshes (100-200 pairs in June 1974), and a very common winter visitor, mainly to the tidal mudflats (maximum 1,820 in January 1974).

Caspian Tern *Sterna caspia*: A fairly common breeding bird in the marshes (15-20 pairs in 1972 and 1974), and a scarce winter visitor (maximum 10 in January 1974).

Common Tern *Sterna hirundo*: A common summer visitor to the marshes (60-100 pairs in 1972 and 1974). A late migrant was recorded near Bandar-e Shahpur on 15 November 1973.

Little Tern *Sterna albifrons*: A common summer visitor to the marshes (150-250 pairs in 1972 and 1974).

European Turtle Dove *Streptopelia turtur*: A common passage migrant, breeding abundantly in riverine forest and scrub to the north. Eighty were recorded in the marshes on 14 May 1972.

Laughing Dove *Streptopelia senegalensis*: A common resident in gardens around Abadan and Bandar-e Shahpur.

Collared Dove *Streptopelia decaocto*: A common resident in villages around the marshes and in Abadan and Bandar-e Shahpur.

Common Cuckoo *Cuculus canorus*: A migrant in the southern marshes on 13 May 1972.

Short-eared Owl *Asio flammeus*: One record of a single bird in the marshes in January (full details not available).

Pallid Swift *Apus pallidus*: Two over the marshes on 16 January 1975. This was a common winter visitor to the Abadan area, where there were 30 on 7 January 1972.

Common Kingfisher *Alcedo atthis*: Probably a winter visitor in small numbers; singles were recorded on Abadan Island on 16 February 1971 and at Abadan Gravel Pit on 14 November 1973.

White-breasted Kingfisher *Halcyon smyrnensis*: A fairly common resident in date gardens around the marshes. Twenty were recorded in the area on 4 June 1974.

Pied Kingfisher *Ceryle rudis*: A common resident in the marshes, with numbers swelling in winter. High counts included 24 on 13/14 May 1972, 60 on 4 June 1974, and over 550 on 7/8 January 1972.

Blue-cheeked Bee-eater *Merops persicus*: A very common summer visitor to the marshes; at least 230 were present on 13/14 May 1972, and 400 on 4 June 1974.

European Roller *Coracias garrulus*: A passage migrant; nine on 13/14 May 1972 and one on 4 June 1974.

Indian Roller *Coracias benghalensis*: A fairly common winter visitor to the marshes (maximum nine on 14 November 1973), with a few pairs breeding in the area.

Eurasian Hoopoe *Upupa epops*: A migrant near Bandar-e Shahpur on 17 February 1971.

Hoopoe Lark *Alaemon alaudipes*: A fairly common resident on the bare flats around the marshes.

Calandra Lark *Melanocorypha calandra*: A common winter visitor to the surrounding plains; hundreds were recorded in January 1972.

Lesser Short-toed Lark *Calandrella rufescens*: An abundant winter visitor to the edges of the marshes and adjacent halophytic plains, also breeding in the area in much smaller numbers.

Crested Lark *Galerida cristata*: A common resident throughout the area.

Eurasian Skylark *Alauda arvensis*: A common winter visitor to the surrounding plains; hundreds were recorded in January 1972.

Sand Martin *Riparia riparia*: A common passage migrant and summer visitor. At least 1,000 were present over the marshes in June 1974.

Barn Swallow *Hirundo rustica*: A common passage migrant and summer visitor, with a few birds remaining throughout the winter.

House Martin *Delichon urbica*: Probably a scarce winter visitor; recorded on two occasions in January at Abadan Gravel Pit (one on 7 January 1972 and five on 24 January 1974).

Pied Wagtail *Motacilla alba*: A fairly common winter visitor.

Yellow Wagtail *Motacilla flava*: A passage migrant, and probably also a scarce breeding summer visitor (*M. f. feldegg*). Eight birds were recorded on 14 May 1972.

Tawny Pipit *Anthus campestris*: A scarce winter visitor; singles on 18 February 1971 and 14 November 1973.

Water Pipit *Anthus spinoletta*: A very common winter visitor to the marshes; 30 on 17 February 1971, 150 on 7/8 January 1972, and 60 on 14/15 November 1973.

White-eared Bulbul *Pycnonotus leucotis*: A common resident in villages and date gardens throughout the area.

Red-backed Shrike *Lanius collurio*: A passage migrant; two in the marshes on 13 May 1972, and nine on 14 May 1972.

Isabelline Shrike *Lanius isabellinus*: A winter visitor; one in the marshes on 16 February 1971, and two in the marshes on 14 November 1973.

Lesser Grey Shrike *Lanius minor*: A passage migrant; one near Bandar-e Shahpur on 13 May 1972, and two in the marshes on 14 May 1972.

Great Grey Shrike *Lanius excubitor*: A fairly common winter visitor to the marshes; 12 on 16 February 1971, four on 7 January 1972, and one on 14 November 1973.

Masked Shrike *Lanius nubicus*: A migrant on the plains north of the marshes on 14 May 1972.

Grey Hypocolius *Hypocolius ampelinus*: A migrant in a garden on the western edge of the marshes on 14 May 1972. This species is a locally abundant breeding summer visitor to riverine thickets along the Dez and Karkheh Rivers north of Ahwaz.

European Robin *Erithacus rubecula*: Probably a fairly common winter visitor; three were recorded in a garden near the marshes on 14 November 1973.

Thrush Nightingale *Luscinia luscinia*: A migrant in a garden near the marshes on 14 May 1972.

Bluethroat *Luscinia svecica*: Probably a regular winter visitor to the marshes in small numbers. One was recorded on 18 February 1971.

Rufous Bush Chat *Cercotrichas galactotes*: A fairly common breeding summer visitor to gardens and scrub around the marshes.

Eversmann's Redstart *Phoenicurus erythronota*: One in a garden near Bandar-e Shahpur on 15 November 1973. This species is a rather scarce winter visitor to southern Iran, although locally quite common in the north.

Black Redstart *Phoenicurus ochruros*: A fairly common winter visitor to the marshes. Ten were recorded on 7 January 1972.

Common Redstart *Phoenicurus phoenicurus*: Two migrants in a garden near Shadegan village on 14 November 1973.

Common Stonechat *Saxicola torquata*: A fairly common winter visitor to the marshes, e.g. five on 7/8 January 1972.

Black-eared Wheatear *Oenanthe hispanica*: Two migrants in the marshes on 14 November 1973.

Desert Wheatear *Oenanthe deserti*: A common winter visitor to the plains around the marshes, e.g. 10 on 18 February 1971, and 15 on 14 November 1973.

Isabelline Wheatear *Oenanthe isabellina*: A common passage migrant, with a few birds probably over-wintering. Fifteen were recorded on 14 November 1973.

Song Thrush *Turdus philomelos*: One in a garden near Shadegan village on 14 November 1973.

Common Babbler *Turdoides caudatus*: A fairly common resident in scrub and gardens around the marshes.

Zitting Cisticola *Cisticola juncidis*: A fairly common resident in the marshes and adjacent rice paddies. These marshes are the main stronghold of this species in Iran.

Graceful Prinia *Prinia gracilis*: A very common resident throughout the area.

Moustached Warbler *Acrocephalus melanopogon*: A common breeding bird in the marshes and perhaps mainly resident, as there were several records in winter. At least 22 were recorded in song in the northern marshes on 14 May 1973.

European Reed Warbler *Acrocephalus scirpaceus*: A fairly common breeding summer visitor to the marshes. Four were recorded in song on 4 June 1974.

Clamorous Reed Warbler *Acrocephalus stentoreus*: A fairly common breeding bird in the marshes (e.g. at least 13 on 14 May 1972). Apparently mainly a summer visitor, although one was recorded on 16 February 1971.

Booted Warbler *Hippolais caligata*: A summer visitor to scrub and gardens around the marshes. Ten were recorded in song in a garden near the marshes on 14 May 1972.

Willow Warbler *Phylloscopus trochilus*: A migrant in a garden near Shadegan village on 4 June 1974.

Chiffchaff *Phylloscopus collybita*: A winter visitor to gardens around the marshes. One was observed in a garden near Shadegan village on 14 November 1973, and there were several records from gardens in Abadan in January.

Desert Warbler *Sylvia nana*: A scarce winter visitor; two in the desert north of the marshes on 18 February 1971, and one on the edge of the marshes on 14 November 1973.

Menetries' Warbler *Sylvia mystacea*: A migrant in a garden near Shadegan village on 14 November 1973. This species is a common breeding summer visitor to riverine thickets and scrub further north in Khuzestan.

Spotted Flycatcher *Muscicapa striata*: A migrant on the western edge of the marshes on 13 May 1972.

Corn Bunting *Miliaria calandra*: A fairly common winter visitor to the edge of the marshes.

Brambling *Fringilla montifringilla*: A single bird in a garden on the northern edge of the marshes on 14 November 1973.

European Goldfinch *Carduelis carduelis*: A scarce winter visitor, recorded in January 1975 on the western edge of the marshes.

House Sparrow *Passer domesticus*: A common resident.

Spanish Sparrow *Passer hispaniolensis*: A winter visitor, recorded commonly in February 1971.

Yellow-throated Sparrow *Petronia xanthocollis*: A migrant in a garden near Shadegan village on 4 June 1974.

Common Starling *Sturnus vulgaris*: An abundant winter visitor to the marshes, where vast flocks were present in January 1974 and many thousands in January 1975.

Rook *Corvus frugilegus*: A fairly common winter visitor to the marshes, with counts of 50 in February 1971 and 50 in November 1973.
Hooded Crow *Corvus (corone) cornix*: A rather scarce resident in the marshes.

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Table 1: Mid-winter Wildfowl Counts in Khuzestan

	70/71	71/72	72/73	73/74*	74/75*	75/76	76/77	77/78
<i>Pelecanus onocrotalus</i>			17	12	60	NA**	NA	47
<i>Pelecanus crispus</i>	7	58	20	239	90	NA	NA	17
<i>Pelecanus</i> sp.			146			NA	NA	
<i>Phoenicopterus ruber</i>	36	104	204	12	2815	NA	370	
<i>Anas platyrhynchos</i>	587	3,307	4,443	20,785	26,785	1,066	5,250	877
<i>Anas crecca</i>	12,981	6,520	24,771	96,671	384,353	20,584	2,163	7,079
<i>Anas querquedula</i>	86			10				723
<i>Anas strepera</i>	387	126	77	10,945	12,489	542	8,353	45
<i>Anas penelope</i>	1,247	529	225	13,734	11,323	3	2,362	
<i>Anas acuta</i>	17,537	20,532	61,772	34,448	247,768	71,221	61,447	16,500
<i>Anas clypeata</i>	671	190	2,959	10,068	20,836	1,416	2,556	9,007
<i>Marmaronet. angustirostris</i>	12,635	10,000	19,979	4,140	5,253		12	11,033
<i>Netta rufina</i>	7			3		21	15	30
<i>Aythya fuligula</i>	7	46	128	1,247	76	187	215	
<i>Aythya ferina</i>	92	287	155	276	585	457		543
<i>Aythya nyroca</i>	6	4	4	11	14		7	30
<i>Bucephala clangula</i>	1				1			
<i>Mergellus albellus</i>				1	3	14		
<i>Tadorna tadorna</i>	12	1	83	11	4	200		109
<i>Tadorna ferruginea</i>	93	606	181	386	714	8		1,415
Duck sp.	12,380	45,402	11,164	22,372	101,363	86,570	10,875	14,966
<i>Anser anser</i>	2,964	5,089	511	11,112	4,676	NA	NA	3,526
<i>Anser albifrons</i>	1,120	1,300		1,780	659	NA	NA	
<i>Anser erythropus</i>	355	200		280	104	NA	NA	
<i>Anser</i> sp.	2		1,343	4,780	1,936	NA	NA	
<i>Branta ruficollis</i>	3					NA	NA	
<i>Cygnus olor</i>			1					
<i>Grus grus</i>	64	1,315	387	711	703	NA	NA	
<i>Fulica atra</i>	587	496	2,270	6,535	23,616	386	1,965	5,725

*: aerial survey

**: NA = count data not available

Table 2 : Mid-winter Wildfowl Counts at Shadegan Wildlife Refuge

	70/71	71/72	72/73	73/74*	74/75*	75/76	76/77
<i>Pelecanus onocrotalus</i>				7	17	NA**	NA
<i>Pelecanus crispus</i>		3	1		18	NA	NA
<i>Pelecanus sp.</i>			75		1	NA	NA
<i>Phoenicopterus ruber</i>	32	101	201	504	1,480	NA	370
<i>Anas platyrhynchos</i>	24	128	4,126	2,062	2,415	195	4,800
<i>Anas crecca</i>	8,684	4,720	17,863	61,171	348,325	19,091	1,979
<i>Anas querquedula</i>	61						
<i>Anas strepera</i>	30	106	64	3,750	9,050		8,080
<i>Anas penelope</i>	537	135	214	6,125	9,050		2,335
<i>Anas acuta</i>	17,030	20,359	61,686	34,325	237,150	71,169	61,437
<i>Anas clypeata</i>	152	15	2,659	1,650	16,975	40	2,315
<i>Marmaronetta angustirostris</i>	12,622	10,000	19,979	3,037	5,003		
<i>Aythya fuligula</i>	1	2					
<i>Aythya ferina</i>	42	106				8	
<i>Aythya nyroca</i>	2			10			
<i>Tadorna tadorna</i>	2	1	79	9			
<i>Tadorna ferruginea</i>				6		200	
Duck sp.	12,000	45,226	9,953	4,300	95,410	86,515	10,875
<i>Anser anser</i>	1,428	2,082	456	130	1,156	NA	NA
<i>Anser sp.</i>			1,343			NA	NA
<i>Fulica atra</i>		6	10	352	12,190		1,040

*: aerial survey

** : NA = count data not available

Table 3: Mid-winter and November Waterfowl Counts at Shadegan Wildlife Refuge

	Feb 1971	Jan 1972	Jan 1973	Nov 1973	Jan 1974*	Jan 1975*
<i>Tachybaptus ruficollis</i>						
<i>Podiceps cristatus</i>						
<i>Podiceps nigricollis</i>	1					
<i>Pelecanus onocrotalus</i>					7	17
<i>Pelecanus crispus</i>		3	1			18
<i>Phalacrocorax carbo</i>	2	18	20		27	8
<i>Egretta garzetta</i>	4	11	42	1	6	18
<i>Egretta gularis</i>	2	2	1	10	35	16
<i>Ardea cinerea</i>	270	136	666	162	188	282
<i>Ardea purpurea</i>			13		1	
<i>Casmerodius albus</i>	16	77	139		38	172
<i>Bubulcus ibis</i>						
<i>Ardeola ralloides</i>					1	
<i>Nycticorax nycticorax</i>						
<i>Ixobrychus minutus</i>						
<i>Botaurus stellaris</i>						
<i>Ciconia ciconia</i>	350	230	1,343	3	173	372
<i>Plegadis falcinellus</i>						1
<i>Threskiornis aethiopicus</i>			1			
<i>Platalea leucorodia</i>	2		85		8	3
<i>Phoenicopterus ruber</i>	32	101	201		504	1,480
<i>Anser anser</i>	1,428	2,082	456		130	1,156
<i>Tadorna ferruginea</i>					6	
<i>Tadorna tadorna</i>	2	1	79		9	
<i>Anas penelope</i>	537	135	214	2	6,125	9,050
<i>Anas strepera</i>	340	106	64		3,750	9,050
<i>Anas crecca</i>	8,684	4,720	17,863		61,171	348,325
<i>Anas platyrhynchos</i>	24	128	4,126		2,062	2,415
<i>Anas acuta</i>	17,030	20,359	61,686		34,325	237,150
<i>Anas querquedula</i>	61					
<i>Anas clypeata</i>	152	15	2,659		1,650	16,975
<i>Marm. angustirostris</i>	12,622	10,000	19,979		3,037	5,003
<i>Aythya ferina</i>	42	106				
<i>Aythya nyroca</i>	2				10	
<i>Aythya fuligula</i>	1	2				
<i>Gallinula chloropus</i>				1		
<i>Fulica atra</i>		6	10		352	12,190
<i>Dromas ardeola</i>						
<i>Haematopus ostralegus</i>					1,820	570
<i>Himantopus himantopus</i>	90	800	292	8	790	615
<i>Recurvirostra avosetta</i>	3	61			71	
<i>Burhinus oedicnemus</i>						
<i>Glareola pratincola</i>						
<i>Pluvialis squatarola</i>		1		3		2
<i>Charadrius hiaticula</i>		1				
<i>Charadrius dubius</i>	4					
<i>Charadrius alexandrinus</i>	50	30	36	9		
<i>Charadrius leschenaultii</i>	25	4		22		

Table 3 (continued)

	Feb 1971	Jan 1972	Jan 1973	Nov 1973	Jan 1974*	Jan 1975*
<i>Eudromias morinellus</i>		44				
<i>Vanellus vanellus</i>		55	1	21	600	58
<i>Vanellus indicus</i>				1	1	
<i>Vanellus leucurus</i>	12	60	1	50	6	320
<i>Gallinago gallinago</i>	2		10	3		3
<i>Limosa limosa</i>	30	30			750	60
<i>Limosa lapponica</i>					2,120	200
<i>Numenius arquata</i>	15	10		10	956	317
<i>Tringa erythropus</i>	16	22				
<i>Tringa totanus</i>	80	70		11	1,260	280
<i>Tringa stagnatilis</i>	3	17		3	20	
<i>Tringa nebularia</i>		11		3	1	5
<i>Tringa ochropus</i>	1		4	1		
<i>Tringa glareola</i>						1
<i>Tringa cinerea</i>					70	
<i>Tringa hypoleucos</i>						
<i>Arenaria interpres</i>						
<i>Calidris alba</i>						
<i>Calidris minuta</i>	35	102	1	6		
<i>Calidris temminckii</i>		3		3		
<i>Calidris alpina</i>	200	350	250	1		
<i>Calidris ferruginea</i>						
<i>Philomachus pugnax</i>	70				14	
<i>Phalaropus lobatus</i>						
<i>Larus canus</i>	12	90	9		20	
<i>Larus cachinnans</i>	50	10	8	5	400	830
<i>Larus fuscus</i>					4	3
<i>Larus ichthyaetus</i>			7		5	
<i>Larus ridibundus</i>	400	100	350		12,200	950
<i>Larus genei</i>	12	30	66	12	60	14
<i>Chlidonias hybridus</i>	4	120	291			7
<i>Chlidonias leucopterus</i>						
<i>Sterna nilotica</i>	70	44	1	20	1,820	207
<i>Sterna caspia</i>			4		10	2
<i>Sterna hirundo</i>				1		
<i>Sterna albifrons</i>						

*: aerial survey

Table 4: Waterfowl Counts at Shadegan Wildlife Refuge during the breeding season

	May 1972	Aug 1972	June 1974	Remarks
<i>Tachybaptus ruficollis</i>	1			Probably breeding
<i>Podiceps cristatus</i>			2	Probably breeding
<i>Podiceps nigricollis</i>				
<i>Pelecanus onocrotalus</i>	1			Immature
<i>Pelecanus crispus</i>	34		61	Breeds in winter
<i>Phalacrocorax carbo</i>			8	Immatures
<i>Egretta garzetta</i>	186	43		
<i>Egretta gularis</i>	10	10	77	Breeding colony in 1974
<i>Ardea cinerea</i>	50	37	42	Non-breeders
<i>Ardea purpurea</i>	61	30	42	Presumably breeding
<i>Casmerodius albus</i>	11		4	Non-breeders
<i>Bubulcus ibis</i>	1			
<i>Ardeola ralloides</i>	65	5	10	Probably breeding
<i>Nycticorax nycticorax</i>			1	
<i>Ixobrychus minutus</i>	1	2		Probably breeding
<i>Botaurus stellaris</i>	1		6	Presumably breeding
<i>Ciconia ciconia</i>	27		9	Breeding nearby
<i>Plegadis falcinellus</i>		1		
<i>Threskiornis aethiopicus</i>	8			Including one immature
<i>Platalea leucorodia</i>	43		5	Non-breeders
<i>Phoenicopterus ruber</i>	2,890		985	Non-breeders
<i>Anser anser</i>				
<i>Tadorna ferruginea</i>	4			
<i>Tadorna tadorna</i>				
<i>Anas penelope</i>	9			
<i>Anas strepera</i>				
<i>Anas crecca</i>				
<i>Anas platyrhynchos</i>				
<i>Anas acuta</i>	25	3		
<i>Anas querquedula</i>	2	36		
<i>Anas clypeata</i>				
<i>Marmaronetta angustirostris</i>	5		10	Presumably breeding
<i>Aythya ferina</i>				
<i>Aythya nyroca</i>			2	Probably breeding
<i>Aythya fuligula</i>				
<i>Gallinula chloropus</i>				
<i>Fulica atra</i>	2		8	Presumably breeding
<i>Dromas ardeola</i>			3	Presumably breeding
<i>Haematopus ostralegus</i>				
<i>Himantopus himantopus</i>	36	+	129	Breeding
<i>Recurvirostra avosetta</i>	8	172	9	Breeding
<i>Burhinus oedicnemus</i>			1	Probably breeding
<i>Glareola pratincola</i>	30		28	Breeding
<i>Pluvialis squatarola</i>	2		13	
<i>Charadrius hiaticula</i>	65		6	
<i>Charadrius dubius</i>				
<i>Charadrius alexandrinus</i>	26		74	Breeding
<i>Charadrius leschenaultii</i>				

Table 4 (continued)

	May 1972	Aug 1972	June 1974	Remarks
<i>Eudromias morinellus</i>				
<i>Vanellus vanellus</i>				
<i>Vanellus indicus</i>	20	+	2	Breeding
<i>Vanellus leucurus</i>	95	+	123	Breeding
<i>Gallinago gallinago</i>				
<i>Limosa limosa</i>				
<i>Limosa lapponica</i>				
<i>Numenius arquata</i>	1		2	
<i>Tringa erythropus</i>				
<i>Tringa totanus</i>		+		
<i>Tringa stagnatilis</i>	1			
<i>Tringa nebularia</i>	1	13		
<i>Tringa ochropus</i>				
<i>Tringa glareola</i>	84			
<i>Tringa cinerea</i>				
<i>Tringa hypoleucos</i>	3	1		
<i>Arenaria interpres</i>	14		10	
<i>Calidris alba</i>	3			
<i>Calidris minuta</i>	170		42	
<i>Calidris temminckii</i>				
<i>Calidris alpina</i>	1		10	
<i>Calidris ferruginea</i>	385		122	
<i>Philomachus pugnax</i>	355			
<i>Phalaropus lobatus</i>	15		20	
<i>Larus canus</i>				
<i>Larus cachinnans</i>			1	Immature
<i>Larus fuscus</i>				
<i>Larus ichthyaetus</i>				
<i>Larus ridibundus</i>	90	+	1	Immatures
<i>Larus genei</i>	1,557	+	860	Breeding
<i>Chlidonias hybridus</i>	36		2	Breeding in 1972
<i>Chlidonias leucopterus</i>	306			
<i>Sterna nilotica</i>	2		283	Breeding
<i>Sterna caspia</i>	20	6	30	Breeding
<i>Sterna hirundo</i>	100		127	Breeding
<i>Sterna albifrons</i>	350	+	219	Breeding

Table 5: Surveys of Shadegan Marshes and adjacent tidal mudflats : 1971 – 1978

Year	Dates	Type of survey	Personnel	Data*
1971	16-17 February	Waterfowl counts	Scott, Carp & Adhami	Full
1972	3 January	Waterfowl counts	Carp & Eftakhar	Wildfowl
1972	7-8 January	Waterfowl counts	Scott et al.	Full
1972	3 March	Waterfowl counts	Smart	Wildfowl
1972	9 March	Waterfowl counts	Smart	Wildfowl
1972	13-14 May	Breeding bird survey	Scott & Eftakhar	Full
1972	23-24 August	Breeding bird survey	Eftakhar	Full
1973	17-19 January	Waterfowl counts	Cornwallis et al.	Waterfowl
1973	14 November	Waterfowl counts	Scott et al.	Full
1974	23 January	Aerial survey – waterfowl counts	Scott & Harrington	Full
1974	4 June	Breeding bird survey	Scott et al.	Full
1975	16-18 January	Aerial survey - waterfowl counts	Scott & Harrington	Full
1975	Late January	Waterfowl counts	Ashtiani & Brooke	Wildfowl
1976	19-21 January	Waterfowl counts	DOE personnel	Wildfowl
1977	28-30 January	Waterfowl counts	DOE personnel	Wildfowl
1978	? January	Waterfowl counts	DOE personnel	Totals

*: Data available:

Full – full details of all bird species recorded during survey.

Waterfowl – counts of all waterbirds recorded during survey.

Wildfowl – counts of pelicans, flamingos, Anatidae and coots only.

Totals – only the totals for the whole of Khuzestan Province are available.