

The shorebirds of Gharo Creek and the Indus Delta, Pakistan

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INTRODUCTION

Little has been published on shorebird populations within the Indus Delta, Pakistan (Finlayson & Moser 1991). For three creeks within the delta, A Directory of Asian Wetlands (Scott 1989) summarises data from two waterfowl surveys undertaken in January 1987 and 1988. Otherwise Roberts (1991) appears to provide the only quantitative published data, in the form of opportunistic counts taken during several boat trips within parts of the Delta. During a recent environmental impact assessment for industrial development at Port Qasim, data were gathered from the adjacent intertidal areas of Gharo Creek ($67^{\circ}23'N$ $24^{\circ}47'E$). The results of these surveys are summarised below.

STUDY AREA

The Indus Delta is a vast complex of tidal water courses, low-lying sandy islands, mangrove swamps, intertidal mudflats and bare salt flats, covering about 600,000 ha. The study area was a 5 km section of Gharo Creek (Figure 1) which is situated at the northern end. Mangrove swamp fringes the entire southern shore but the north shore, where it runs east from a power station, is a foreshore of sand dune and saltmarsh, behind which lies semi-desert scrub. During low tide extensive mudflats are exposed along Gharo Creek, 3.5 km² lying within the study area.

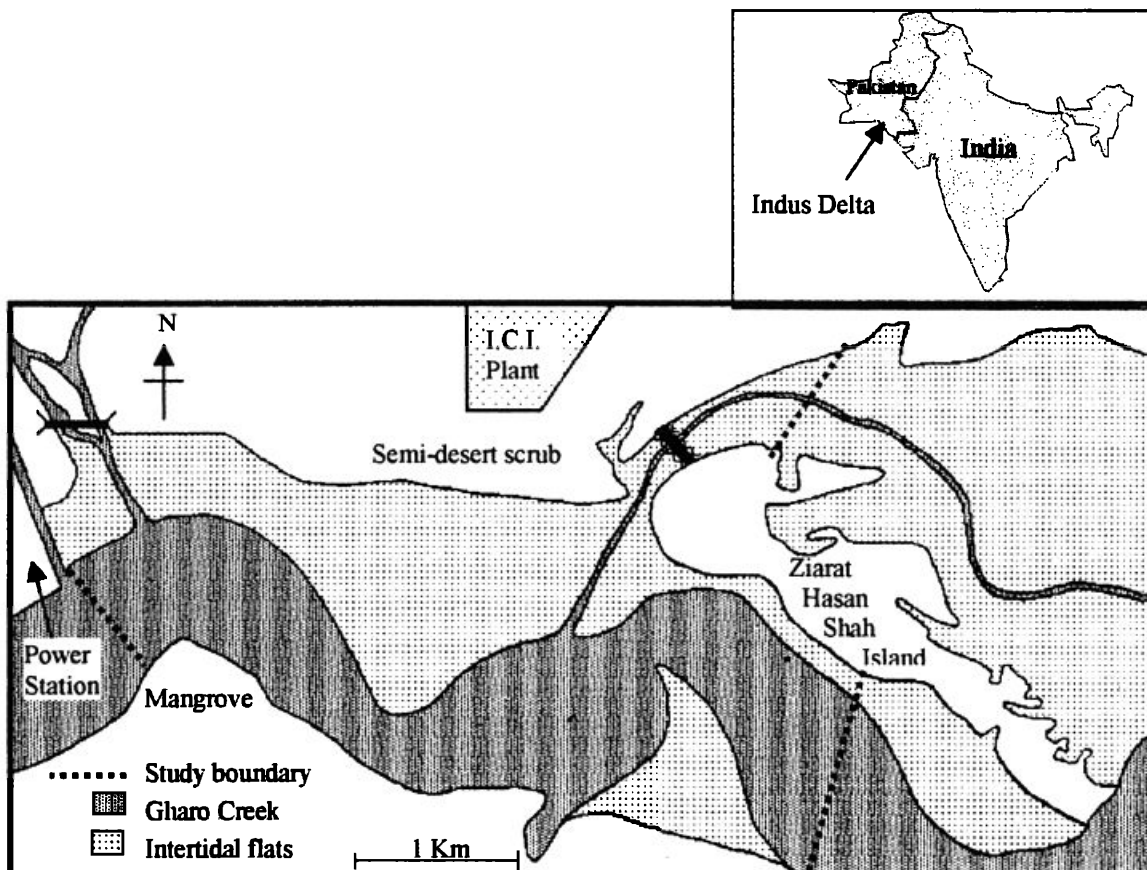


Figure 1 Map of the study area, Gharo Creek, Indus Delta, Pakistan

METHODS

Shorebird counts were undertaken within two two-week periods, in April 1996 (2nd–13th) and January/February 1997 (20th–1st). The two survey periods were timed to assess, respectively, the spring passage and wintering populations of shorebirds using Gharo Creek. Counts were undertaken within two hours periods either side of low or high water. The timing, frequency and extent of coverage of a count within one tidal period was constrained by local conditions, in particular security considerations i.e. the threat posed from terrorists and bandits. Casual observations were also made of shorebird movements and their timings between different areas within the study site and beyond. All observations were undertaken from Ziarat Hasan Shah Island and the mainland's northern shore. Identification of all individuals of some smaller species was often not possible, due to viewing range, heat haze or poor light conditions; all counts should therefore be treated as minima, particularly of plovers (Greater Sandplover *Charadrius leschenaultii* and smaller plovers) and calidrid sandpipers. Optical equipment used was a 15–60x60 telescope and 10x40 binoculars.

RESULTS

For all 26 intertidal wader species that occurred during the study, the minimum numbers estimated within the study area are presented in Table 1. Including those birds seen but not identified (mostly the small plovers & Calidrids) the study area held on a given day over 2,200 and 2,900 shorebirds during April 1996 and January 1997, respectively. The degree to which the turnover of passage migrants occurs is unknown. Clearly, any turnover would further increase the total numbers of individuals using the site. Observations showed that all birds roosting in the study area also fed there, supplemented by others that had roosted elsewhere. No movements of birds were observed to and from sites to the west of the study area, around Port Qasim.

Five species of shorebird (Black-winged Stilt *Himantopus himantopus*, Little Ringed Plover *Charadrius dubius*, Common Sandpiper *Actitis hypoleucos*, Common Snipe *Gallinago gallinago* and Temminck's Stint *Calidris temminckii*) occurred entirely or largely in a freshwater tributary of Gharo Creek, at the study area's north-west corner. Another two shorebird species (not tabulated) were recorded primarily inland, adjacent to the Gharo Creek study area. These were Red-wattled Lapwing *Vanellus indicus* and Yellow-wattled Lapwing *Vanellus malabaricus*. During April six pairs of the former and four pairs of the latter defended territories within the semi-desert scrub of the north shore. In the winter period, four Yellow-wattled Lapwings were present there from 1st February, unusually early for this species as the main arrival of this localised summer visitor to Pakistan occurs from late February (Roberts 1991).

DISCUSSION

Of the shorebird species observed at Gharo Creek the changes in abundance from April to January are generally as expected from the phenology described by Roberts (1991) for each species. Differences exist in species' relative abundance, presumably a consequence of habitat differences between count sites. For example, the numbers of wintering Terek Sandpipers *Xenus cinereus* were similar to those of Redshanks *Tringa totanus* in Gharo Creek whereas Terek Sandpipers were relatively less abundant than Redshanks in Ghrizi Creek (Roberts 1991).

The Korangi creek area of the Delta has been surveyed regularly (Hasan in litt.), the resultant quantitative data having been published only as a summary by Scott (1989) and incorporated within the statistics of the most recent International Waterfowl Census publication for Asia (Perennou *et al* 1994). The quantitative data presented by Scott (1989) is of a waterfowl survey of three creeks including Korangi, in January 1988, with counts provided for 17 of the 30 waterbird species recorded, nine of the 17 being shorebirds. Hasan (1994) provided a checklist of shorebirds observed in the Indus Delta with status comments limited to "resident", "winter visitor" or "straggler". As a consequence, the relative conservation importance of areas within the Indus Delta is currently difficult to evaluate in quantitative terms.

The International Waterfowl Census's (IWC) coverage of the Indus Delta may have been incomplete. This is apparent when comparing their data with those from Gharo Creek and Ghrizi Creek (Table 1). For eleven species, Pakistan's peak winter counts were closely approached or exceeded by the numbers counted along the 5km stretch of Gharo Creek or by the casual counts made in the Indus Delta by Roberts (1991). No evidence exists to suggest that over the past decade a substantial population increase has occurred in these species which might explain the difference between the IWC and the present study's figures. Furthermore Roberts' (1991) counts were undertaken within the decade of the IWC counts. For two species in particular, Broad-billed Sandpiper and Greater Sandplover, the difficulties in identifying individuals in winter when amongst the commoner species is also likely to have led to under-recording in the IWC counts.

On the assumption that the Gharo Creek's shorebird densities are representative of those on mudflats elsewhere in the delta, extrapolation could provide crude estimates for each species for the whole Indus Delta. However, data on the total area of tidal flats within the delta are not readily accessible, if known at all. The study area within Gharo Creek, including all habitats, comprises less than 0.2% of the Indus Delta. If applied to the data presented in Table 1 extrapolation suggests that the current figures available for several estuarine shorebird species in Pakistan are probably gross underestimates. How Gharo Creek ranks in conservation terms within the Indus Delta (and Pakistan as a consequence)

Table 1 Comparison of shorebird numbers within Gharo Creek, Indus Delta, Pakistan, with local and national data

SPECIES	Minimum population estimate in study area		Min. density birds/km ² Jan'97	International Waterfowl Census (Perennou <i>et al</i> 1994) Pakistan's peak winter count 1977-86	Opportunistic counts for parts of the Indus Delta (Roberts (Roberts 1991)#
	Apr'96	Jan'97			
Eurasian Oystercatcher <i>Haematopus ostralegus</i>	4	6	2	80	200–500 (winter)
Black-winged Stilt <i>Himantopus himantopus</i>	2	42	12	2980	–
Pied Avocet <i>Recurvirostra avosetta</i>	28	0	0	913	200+ (winter & April)
Grey Plover <i>Pluvialis squatarola</i>	99	164	47	172	300 (winter), 200+ (April)
Ringed Plover <i>Charadrius hiaticula</i>	1	0	0	15	100 (August)
Little Ringed Plover <i>Charadrius dubius</i>	13	16	5	26	300 (August)
Kentish Plover <i>Charadrius alexandrinus</i>	1	160	46	7,232	–
Lesser Sandplover <i>Charadrius mongolus</i> (winter)*	300	450	129	461	Flocks of 300–700
Greater Sandplover <i>Charadrius leschenaultii</i>	50	100	29	10	–
Bar-tailed Godwit <i>Limosa lapponica</i>	11	22	6	910	100 (winter), 200 (April)
Whimbrel <i>Numenius phaeopus</i>	6	11	3	10	100 (winter)
Eurasian Curlew <i>Numenius arquata</i>	60	150	43	213	5,000 (winter)*
Spotted Redshank <i>Tringa erythropus</i>	4	0	0	–	–
Redshank <i>Tringa totanus</i>	25	200	57	987	2,000 (winter)*
Marsh Sandpiper <i>Tringa stagnatilis</i>	12	38	11	98	200 (April)
Greenshank <i>Tringa nebularia</i>	5	2	1	259	–
Green Sandpiper <i>Tringa ochropus</i>	0	3	1	67	–
Wood Sandpiper <i>Tringa glareola</i>	9	5	2	127	100 (April)
Terek Sandpiper <i>Xenus cinereus</i>	100	200	57	740	100 (winter)*
Common Sandpiper <i>Actitis hypoleucos</i>	3	6	2	20	70 (winter)*
Common Snipe <i>Gallinago gallinago</i>	0	14	4	1126	–
Little Stint <i>Calidris minuta</i>	52	225	64	10,514	5,000–10,000 (winter)
Temminck's Stint <i>Calidris temminckii</i>	19	24	7	–	–
Dunlin <i>Calidris alpina</i>	126	169	48	22,773	–
Curlew Sandpiper <i>Calidris ferruginea</i>	4	5	2	4	–
Broad-billed Sandpiper <i>Limicola falcinellus</i>	15	52	15	1	400 (April)
Total numbers of unidentified shorebirds	1340	836	239		
Total numbers of shorebirds (all species)	2289	2900	829		

Note: counts from Ghrizi Creek, except for those marked with an asterisk, for which no Indus Delta area was specified.

cannot yet be established with any degree of certainty.

One shorebird species occurring in Gharo Creek of particular interest is the Broad-billed Sandpiper *Limicola falcinellus*. The official conservation status of Broad-billed Sandpiper according to IUCN criteria is vulnerable (Piersma *et al.* 1997), and the breeding and wintering ranges have yet to be fully elucidated (Hayman *et al.* 1986). The species' presence within the Indus Delta system, already identified by Roberts (1991), is therefore likely to be of conservation importance. Hasan's checklist of species compiled from observations from ten sites

across the Indus Delta (Hasan 1994) however makes no mention of Broad-billed Sandpiper. It is not clear whether this is because of difficulty of identification or a patchy distribution of the species. In 'A Directory of Asian Wetlands', Scott (1989) also makes no mention of Broad-billed Sandpiper under the site accounts for Korangi and Gharo Creeks.

Clearly, extensive surveys of the Delta's shorebirds are needed to assist in identifying the importance of the Indus Delta and areas within it, both in the context of international flyways and

at a national level. Without the availability of such data, assessing the likely impact of any development within the Delta is difficult to quantify in terms of its significance to nature conservation.

CONCLUSION

Though the findings of the present survey may not have revealed Gharo Creek to be of substantial conservation importance, the fact that the shorebird numbers cannot easily be put into context, within the Indus Delta as a whole, is of concern in conservation terms. More extensive and up-to-date shorebird censuses of the Indus Delta are needed, for without these the environmental impact of developments such as those for which the current data were collected (Ward 1996, 1997), can never be adequately assessed from a conservation perspective.

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REFERENCES

- Finlayson, M. & Moser, M. ed. 1991. *Wetlands*. Wetlands International, Netherlands.
- Hasan, A-U. 1994. The birds of Sindh mangroves. *Records Zool. Sur. Pakistan* 12:98-105.
- Hayman, P., Marchant, J. & Prater T. 1986. *Shorebirds: an identification guide to the waders of the world*. Christopher Helm, London.
- Perennou, C., Mundkur T., Scott, D.A., Follestad, A. & Kvenild, L. 1994. *The Asian Waterfowl Census 1987-91: Distribution and status of Asian Waterfowl*. AWB Publication No. 24. AWB, Kuala Lumpur, Malaysia and IWRB, Slimbridge, U.K.
- Piersma, T., Wiersma, P. & van Gils, J. 1997. The many unknowns about plovers and sandpipers of the world: introduction to a wealth of research opportunities highly relevant for shorebird conservation. *Wader Study Group Bull.* 82: 23-33.
- Roberts, T.J. 1991. *The birds of Pakistan. Vol. 1*. Oxford University Press, Karachi.
- Scott, D.A. (compiler) 1989. *A Directory of Asian Wetlands*. IUCN, The World Conservation Union.
- Ward, R.M. 1996. *An Ornithological Survey of ICI Pakistan's Port Qasim site, April 1996*. - A report to K.Smith, I.C.I.'s Ecology Consultant.
- Ward, R.M. 1997. *An Ornithological Survey of ICI Pakistan's Port Qasim site, January 1997*. - A report to K.Smith, I.C.I.'s Ecology Consultant.

