

INDUS BASIN



THE wetlands associated with the Indus river and its tributaries are the stronghold for two species of migratory duck in the Asia region, White-headed Duck and Marbled Teal. Populations of the former are concentrated in north-east Pakistan, in Punjab province, while the latter visits shallow wetlands in the lowlands of Sind in southern Pakistan. An important non-breeding population of Dalmatian Pelican also occurs here, mostly on large lakes near the Indus delta. Jerdon's Babbler breeds very locally in reedbeds and other tall riverine grasslands along the Indus river and its tributaries. Breeding populations of Pallas's Fish-eagle and Indian Skimmer were once large, but have declined to low levels over recent decades.

- **Key habitats** Freshwater and coastal wetlands, saline lakes.
- **Countries and territories** Pakistan.

	Threatened species			Total
	CR	EN	VU	
●	—	—	4	4
✈	—	—	—	—
🦢 ¹	—	1	1	2
Total	—	1	5	6

Key: ● = breeding in this wetland region.

✈ = passage migrant.

🦢 = non-breeding visitor.

¹ The Conservation Dependent Dalmatian Pelican is also a non-breeding visitor to this region.

An important population of Marbled Teals winters in southern Pakistan.

PHOTO: RAY TIPPER



OUTSTANDING IBAs FOR THREATENED BIRDS (see Table 1)

Three IBAs have been selected, which cover some of the most important wintering concentrations of White-headed Duck and Marbled Teal, and populations of Dalmatian Pelican and Pallas's Fish-eagle.

CURRENT STATUS OF HABITATS AND THREATENED SPECIES

Pakistan once supported enormous waterbird populations, especially in winter, but these declined dramatically during the twentieth century. Many natural wetlands disappeared as a result of irrigation and drainage projects to provide more land for agriculture and habitation, although at the same time new lakes and marshes were created upstream of dams and barrages, or as a result of faulty drainage systems or overspill

from irrigation canals. Although this overall loss of habitat was undoubtedly a factor in waterbird declines, the main cause was probably the high levels of hunting and disturbance throughout much of the Indus watershed. These pressures continue to depress waterbird numbers, but if they could be controlled there is potential for population recoveries.

CONSERVATION ISSUES AND STRATEGIC SOLUTIONS (summarised in Table 3)

Habitat loss and degradation

■ CONVERSION TO AGRICULTURE

Wetlands in Pakistan continue to be affected by irrigation and drainage schemes, usually associated with agricultural development. These activities may alter the water depth, and hence the suitability of wetlands for different waterbird species, and they leave wetlands vulnerable to desiccation and conversion. The potential impact of proposed

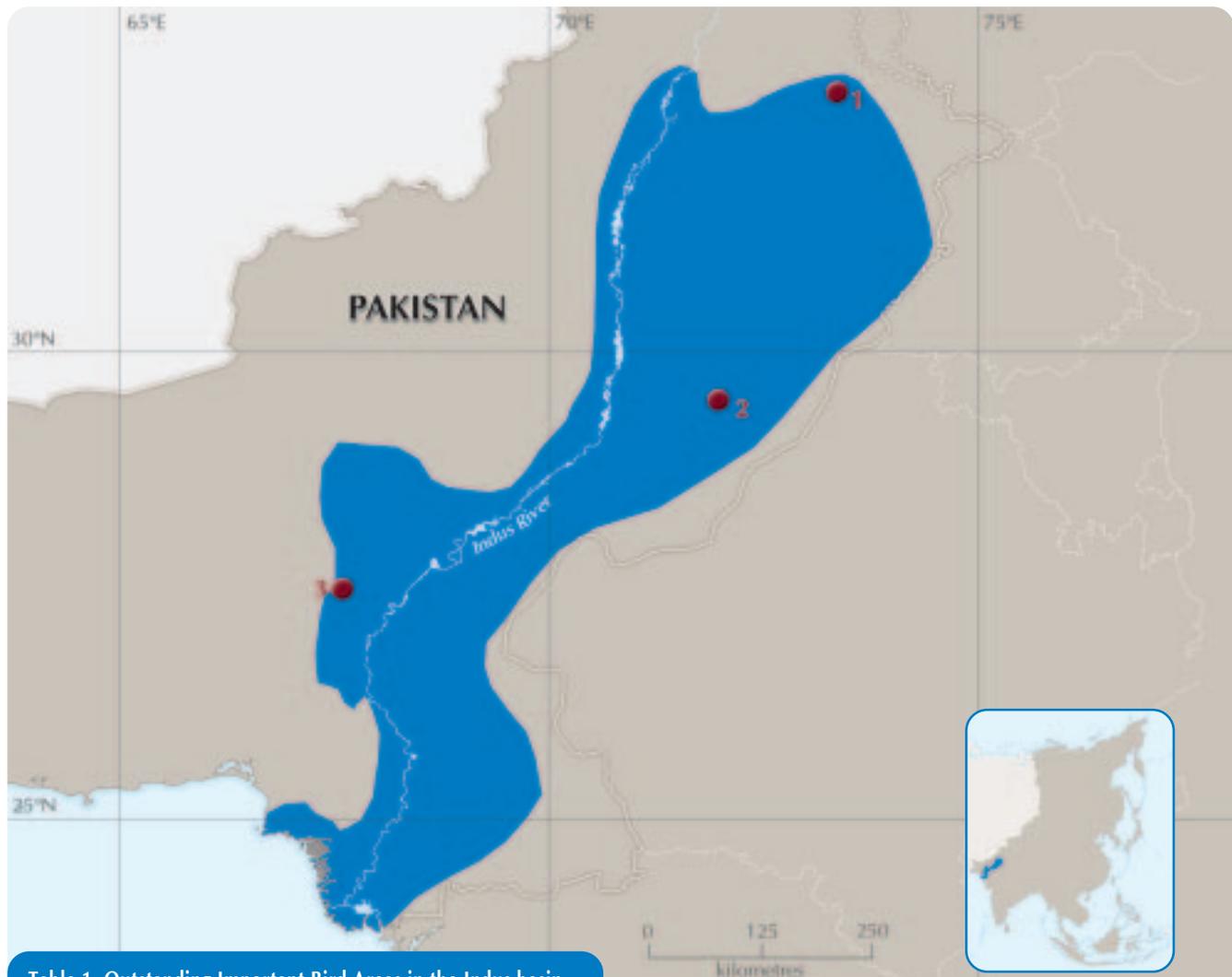


Table 1. Outstanding Important Bird Areas in the Indus basin.

IBA name	Status	Territory	Threatened species
1 Salt Range lakes	(PA) ^R	Punjab	Wintering site for White-headed Duck, also Pallas's Fish-eagle
2 Lal Suhanra NP	PA ^{BR}	Punjab	Small numbers of Pallas's Fish-eagle, also Dalmatian Pelican
3 Hamal (Katchri and Mehur)	—	Sind	Wintering site for Marbled Teal, large numbers in some winters

Note that more IBAs in this region will be included in the *Important Bird Areas in Asia*, due to be published in early 2004.

Key IBA name: NP = National Park.

Status: PA = IBA is a protected area; (PA) = IBA partially protected; — = unprotected; BR = IBA is wholly or partially a Biosphere Reserve (see pp.34–35); R = IBA is wholly or partially a Ramsar Site (see pp.31–32). White-rumped Vulture of region G03 has (or had) populations in several IBAs in this region.

PHOTO: ZULFIKAR ALI/WWF-PAKISTAN

The Salt Range lakes support a large wintering population of White-headed Ducks.

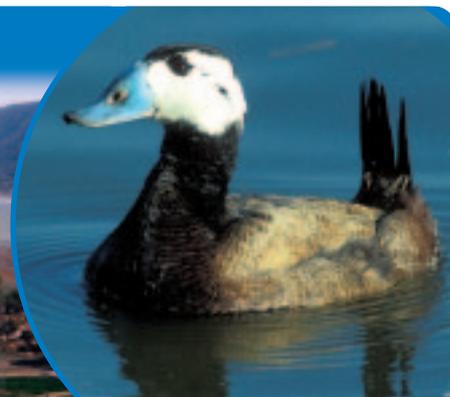


PHOTO: TONY MARTIN/BIRD LIFE



Table 2. Threatened birds of the Indus basin.

Species		Distribution and population
Dalmatian Pelican <i>Pelecanus crispus</i>	CD	Non-breeding visitor, mostly to southern Sind and the Indus delta
White-headed Duck <i>Oxyura leucocephala</i>	EN	Several hundred have wintered in Punjab Salt Range, but numbers have recently declined
Marbled Teal <i>Marmaronetta angustirostris</i>	VU	Winters in the wetlands of Sind, although numbers appear to be declining
Pallas's Fish-eagle <i>Haliaeetus leucoryphus</i>	VU	A small and declining breeding population is augmented by wintering birds
Sarus Crane <i>Grus antigone</i>	VU	A tiny breeding population survives in eastern Sind
Indian Skimmer <i>Rynchops albicollis</i>	VU	A small and declining population, presumably still nests on quieter reaches of the major rivers
Jerdon's Babbler <i>Chrysomma altirostre</i>	VU	Local along the Indus and its tributaries, in tall riverine grasslands

Other threatened waterbirds recorded from this region as rare visitors are: Greater Adjutant *Leptoptilos dubius*, Lesser White-fronted Goose *Anser erythropus* and Siberian Crane *Grus leucogeranus*. In addition to the waterbirds, Greater Spotted Eagle *Aquila clanga* (VU; see F01) and Imperial Eagle *A. heliaca* (VU; see G01) occur in winter.

= region estimated to support <10% of global breeding population, = proportion of global breeding population unknown; = region estimated to support 10–50% of global non-breeding population, = <10%

irrigation and drainage schemes needs to be assessed through environmental impact assessments, particularly to investigate whether they will affect the hydrology of any key sites for threatened birds; if so, mitigation measures are required to minimise any negative impacts.

WETLAND EXPLOITATION

The vegetation bordering wetlands provides vital feeding, shelter and nesting sites for many waterbirds, but it is commonly cut or burnt, for example to make thatch and other grass products, and to make way for agriculture and settlements. Large trees near lakes and rivers are felled for fuel, timber and fodder, resulting in a shortage of nest sites for Pallas's Fish-eagle. Exploitation of vegetation fringing important wetlands needs to be controlled, to leave sufficient undisturbed habitat for waterbirds. Potential Pallas's Fish-eagle eyries must be protected from cutting and disturbance, possibly through the creation of small village sanctuaries. The planting of nest trees or provision of artificial nesting platforms should be undertaken for this species, carefully sited to avoid disturbance and persecution. Environmental awareness initiatives are needed at key sites, stressing the importance of healthy wetlands (e.g. in preserving water quality and fish stocks) and the need for exploitation of wetland resources to be sustainable.

DAMS AND IRRIGATION

Hydroelectric power schemes and irrigation projects have required the construction of several barrages on the main Indus channel and associated waterways. The diversion of winter flow from rivers seems to have caused significant changes in the distribution of wildfowl, delaying the inundation of lakes and markedly changing their ecology. Barrages reduce the incidence of flooding, which in turn allows the gradual encroachment of temporary cultivation on riverbeds and islands, a potential threat to Indian Skimmer which nests colonially in these habitats. However,

large areas of potentially important new wetlands (and wet grassland suitable for Jerdon's Babbler) have been created by irrigation projects, usually by seepage from drainage canals or outfall drains. These new wetlands should be managed for threatened waterbirds wherever possible. Special measures are required to protect all active Indian Skimmer colonies from encroachment and disturbance (once they have been located by surveys), and perhaps also abandoned sites which the species might recolonise.

SILTATION

Sediment run-off and flooding have increased in the Indus watershed because of deforestation in headwater regions and heavy erosion in the densely populated lowlands, causing greater sediment load in the major rivers and more rapid silt deposition in wetlands. As a result, some important sites for waterbirds (e.g. Kushdil Khan) are drying out and becoming overgrown with vegetation. Programmes of forest conservation and reforestation are required in the upper catchment in the Western Himalayas (see F04), possibly coupled with dredging of heavily silted wetlands.

DISTURBANCE

Pakistan's human population is concentrated near sources of water, and rivers carry abundant boat traffic and are almost universally settled by people. The margins of wetlands tend to be heavily grazed and cultivated, and intensively used for fishing, hunting, reed-cutting and recreation. As a consequence, wetland habitats suffer frequent disturbance, which makes them much less attractive to breeding waterbirds. Disturbance needs to be controlled, e.g. at Pallas's Fish-eagle eyries and Indian Skimmer colonies, possibly by designating these sites as local sanctuaries, where human activities can be regulated while they are nesting (e.g. by fences and guards). Effective protection of potential Indian Skimmer breeding sites (i.e. large river islands) might result in its return to previously occupied stretches of river.

Table 3. Conservation issues and strategic solutions for birds of the Indus basin.

Conservation issues	Strategic solutions
Habitat loss and degradation	
<ul style="list-style-type: none"> ■ CONVERSION TO AGRICULTURE ■ WETLAND EXPLOITATION ■ DAMS AND IRRIGATION ■ SILTATION ■ DISTURBANCE ■ POLLUTION ■ REDUCED FOOD SUPPLY 	<ul style="list-style-type: none"> ➤ Assess the environmental impact of proposed irrigation and drainage schemes ➤ Plant nest trees or erect artificial nest platforms for Pallas's Fish-eagle ➤ Manage wetlands created by dams and irrigation to maximise their value for waterbirds ➤ Minimise disturbance near Pallas's Fish-eagle eyries and Indian Skimmer colonies ➤ Develop programmes to reduce pollution levels in wetlands ➤ Control populations of introduced fish, and avoid further introductions
Protected areas coverage and management	
<ul style="list-style-type: none"> ■ GAPS IN PROTECTED AREAS SYSTEM ■ WEAKNESSES IN RESERVE MANAGEMENT 	<ul style="list-style-type: none"> ➤ Establish new protected areas at key wetlands for threatened birds, and designate Pallas's Fish-eagle eyries and Indian Skimmer colonies (once they have been located) as local sanctuaries ➤ Prepare management plans for wetland reserves, to reconcile the needs of people and wildlife ➤ Strengthen reserve management through improved funding, infrastructure and staff training
Exploitation of birds	
<ul style="list-style-type: none"> ■ HUNTING 	<ul style="list-style-type: none"> ➤ Strengthen and enforce hunting laws, with education programmes to publicise the legal status and importance of threatened waterbirds
Gaps in knowledge	
<ul style="list-style-type: none"> ■ INADEQUATE DATA ON THREATENED BIRDS 	<ul style="list-style-type: none"> ➤ Survey breeding Pallas's Fish-eagles and Indian Skimmers, and determine the measures required to protect their nest sites ➤ Monitor the numbers and distribution of wintering White-headed Duck and Marbled Teal ➤ Study the poorly known wetlands in the Indus-irrigated area of Sind

■ POLLUTION

Several types of pollution affect wetlands in Pakistan. Agrochemical run-off causes build-up of toxins or fertilisers in wetlands; the accumulation of pesticides through the food chain can reduce the breeding success of raptor populations, and could be affecting Pallas's Fish-eagle, while fertilisers cause wetland eutrophication. Large quantities of domestic sewage and industrial effluent are released into the Indus and its tributaries, which could be a particular problem for Marbled Teal, as the shallow wetlands it prefers appear especially vulnerable to the build-up of pollutants. A coordinated response to the problem of pollution is required, involving monitoring of outflows, water treatment and control of chemicals used or produced by agriculture and industry.

■ REDUCED FOOD SUPPLY

Stocking of wetlands in Pakistan (e.g. Khabbaki lake) with herbivorous fish (e.g. *Tilapia*) is thought to have contributed to the reduction in duck populations through direct competition for resources. Efforts may be required to control the populations of these fish at some important wetlands for threatened birds, and further introductions should be avoided.

Protected areas coverage and management**■ GAPS IN PROTECTED AREAS SYSTEM**

Some of the most important wetlands in the Indus watershed are officially protected, but other sites with significant numbers of threatened waterbirds should become new protected areas, including Sunari lake, Hamal (Katchri), Badam, Mahboub Shah lake, Ghauspur jheel and Mangla reservoir. Pallas's Fish-eagle eyries and Indian Skimmer colonies also need to be protected, possibly by designation as local sanctuaries.

■ WEAKNESSES IN RESERVE MANAGEMENT

The management infrastructure is inadequate at many protected areas: managers and guards are scarce, underfunded, poorly equipped and poorly motivated. This

situation needs to be rectified through an appropriate injection of funds for salaries, equipment and training. Given the population pressure at many of the wetlands, management plans need to be prepared for the reserves to reconcile the needs of people and wildlife, with important wetlands clearly divided between human use portions and wildlife sanctuaries.

Exploitation of birds**■ HUNTING**

Hunting of waterbirds is popular in many regions of Pakistan, both for food and sport. In Chitral district alone an estimated 1,700 armed hunters have constructed 770 artificial ponds to attract ducks. In other areas, netting operations continue throughout the winter to supply markets in larger towns with waterbirds. Some sites suffer heavy, uncontrolled shooting by army personnel, and collection of eggs is widespread. Hunting laws need to be strengthened and enforced, particularly in protected areas. Education programmes are needed to publicise the legal status and importance of threatened species to local hunters and communities, including using information boards near key breeding and wintering sites. Outside protected areas, sustainable hunting should be promoted.

Gaps in knowledge**■ INADEQUATE DATA ON THREATENED BIRDS**

There are some important gaps in knowledge of the threatened waterbirds of Pakistan. Surveys are required, principally along rivers, to locate Pallas's Fish-eagle eyries and Indian Skimmer colonies, and determine what measures are required for their protection. Regular, coordinated counts need to be continued at wintering sites for White-headed Duck and Marbled Teal; both species may change their wintering grounds from year to year, so long-term monitoring is required for their requirements to be fully understood. The ornithologically unknown wetlands within the Indus-irrigated area of Sind, mainly in the Rice Canal Command, need surveying.