

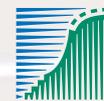
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# Waterbirds around the world

A global overview of the conservation,  
management and research of the  
world's waterbird flyways

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*Cover photography:* Whooper Swans *Cygnus cygnus* arriving at Martin Mere, England. Photo: Paul Marshall.  
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## Strategic role of Pakistan wetland resources: prospects for an effective migratory waterbird conservation network

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### ABSTRACT

Pakistan, situated in the north-west of Southern Asia, provides staging grounds for large numbers of migratory birds from Siberia, Central Asia and Europe. Common and threatened species overwinter in wetlands throughout the country. There have been few studies to monitor the migratory bird populations and their use of wetlands, primarily due to the absence of an effective network that could successfully generate accurate ecological data and information. Current flyway management systems rely on information from local hunters, erratic wildlife surveys and raw estimates. Information gaps exist for key wetland sites including Mangla Lake, Rawal Lake, Zangi Nawar Lake, the high mountain wetlands in northern Pakistan including the Naltar wetland complex, wetlands of Deosai plains and many others. There have been several reports of Black Storks *Ciconia nigra* and cranes; with flocks of Marbled Teal *Marmaronetta angustirostris* reported from drought-hit areas where wetlands have recently revived due to heavy rains. Linkages and partnerships with neighboring countries are also weak. The establishment of an information system through the creation of banding/research stations is recommended. These could then serve as potential nature-based tourism localities to raise public awareness and further sustainable and wise use of wetlands. However, strong support from international wetland organisations would be necessary to build capacity in Pakistan wetland communities. The network would also help in creating much needed knowledge exchange systems, improving public awareness and environmental education for wetlands and waterbirds.

### INTRODUCTION

Pakistan lies in the northwestern part of southern Asia bordering with Afghanistan, Iran, China, India and in the south, the Arabian Sea. Wetland habitats, both natural and man-made, cover approximately 7 800 km<sup>2</sup> (9.7% of the total area of Pakistan). The Indus river system and its flood plains form the main inland wetland areas. From the northern mountains to the southern coast, wetland areas provide refuge for large numbers of wintering migratory birds. Ducks, geese and swans pass through the high mountains to reach lowlands rich with lakes and man-made wetlands. Bar-headed Geese *Anser indicus* fly over high altitude passes as high as 6 000 m and above in a single flight. The most breathtaking experience for bird-watchers is in the Indus Delta and its coastal mangrove forests where the entire area is a magnet for terns, gulls, fish-eagles and Osprey *Pandion haliaetus*, although in some remote areas these birds are still traditionally hunted by local indigenous communities.

Waterbird migration patterns and distribution have not been well studied in Pakistan. There have had been sporadic efforts to

research and count birds, but no consistent or reliable data is available to assist in the development of conservation policy. Lack of ringing facilities and basic field data is also a major problem. Wetlands International's Asian Waterbird Census (Li & Mundkar 2004) covered 94 wetlands in Pakistan between 1997 and 2001, with wider coverage in some past years such as 1993 when 269 sites were covered; and with the help of various experts and contacts, provides valuable data on waterbird populations and their distribution and status, but its coverage is still incomplete. WWF have reported that Pakistan's wetlands and their rich biological resources are threatened by over-exploitation, habitat destruction and polluted environments. The main causes for wetland degradation are ineffective management, poor stakeholder participation and lack of coordination for management strategies.

### METHODS

Between 1991 and 2001 various wetland studies were undertaken to collect detailed information on habitat ecology, species diversity, limnology, feeding habits of various migratory species, conservation measures, hunting activities and a census of migratory birds. The studies included field projects, indirect and direct consultations with relevant government departments; professional field biologists and site managers, as well as a literature review. The wetland sites and areas studied during this period included Zangi Nawar lake, Lulukdan wetlands, Zhob river, Haleji lake, Indus Delta, Indus river, Taunsa Barrage, Chashma barrage, Rangla wetland complex, Kharal lake, Gamaghar lake, Ucchali complex, Namal lake, Mangla reservoir, Tarbela reservoir, Borith lake, Naltar wetland complex, Gilgit river, Hunza river and many others.

### RESULTS

Pakistan has more than 670 species of birds, of which one third are waterbirds, with most of these being migratory species, including geese, ducks, swans, waders and other waterbirds. Species that require urgent attention include Siberian Crane *Grus leucogeranus*, Sarus Crane *Grus antigone*, Dalmatian Pelican *Pelicanus crispus*, Sociable Plover *Vanellus gregarius*, Lesser White-fronted Goose *Anser erythropus* and Pallas's Fish Eagle *Haliaeetus leucoryphus*.

The convergence of three high mountain ranges gives rise to a great variety of landscapes and wetland habitats (glacial lakes, running streams, nullahs or dry watercourses). The unique canal system and combination of man-made and natural wetlands attract millions of birds in unique patterns and congregations at numerous sites throughout Pakistan. Some of the important wetland sites are: Ucchali Lake situated in the Salt range, impor-

tant for globally threatened White-headed Duck *Oxyura leucocephala*; Zangi Nawar lake in the deserts of southern Pakistan in Balochistan province which is important for the globally threatened Marbled Teal *Marmaronetta angustirostris*; and mountain wetlands important for the globally threatened Ferruginous Duck *Aythya nyroca*. Many wetlands in the western and southern parts of the country, such as the Indus river delta, Zhob river (for Siberian Crane) and Haleji Lake, are important for millions of waterbirds either wintering or using them as staging grounds.

There is a lack of consistency in the data for many important sites, and most sites lack regular monitoring of migratory species. Although there have been efforts to survey wetlands sites and their resources, there is a real lack of an effective network of specialists who could successfully generate accurate data and information for developing conservation policies for flyways. Most information has been derived from local hunters, sporadic wildlife surveys and wild estimates. Local efforts to determine the routes of migratory species, their role in ecosystem functioning and demands for conservation action have been erratic. Some waterbird species such as White-headed Duck and Marbled Teal received attention and projects have been launched for their protection and recovery but migratory behavior and flyway routes of many species have not been studied due to the absence of an efficient network that could have linked the information.

There have been several reports of Black Storks *Ciconia nigra* in the northern areas as well as sightings of flocks of Cranes *Grus* spp. in the southern parts of the North-West frontier, Punjab and Balochistan. Some flocks of Marbled Teal have been reported from the southern parts of the country where wetlands had dried up due to long periods of drought but now after many years some wetlands have revived due to recent heavy rains. However, many wetland sites have not been visited for a long time and need urgent attention. One example is Kharal Lake, which formerly supported White-headed Ducks but is now drying out due to human activities causing wetland habitat deterioration and a consequent decline in its biodiversity.

There are major information gaps for important wetland sites such as Mangla Reservoir, Rawal Lake, Zangi Nawar Lake and the high mountain wetlands in northern areas e.g. Naltar lakes and many wetlands of Sindh and Punjab province. IUCN and other conservation organizations, especially WWF and the Ornithological Society of Pakistan (OSP), along with scientists and conservationists have been actively working to provide the

necessary backing for the protection of sites and efforts are underway to develop a national wetland conservation strategy along with an enabling policy framework.

## DISCUSSION

It has long been felt that migratory birds require a specific system and an association of active field scientists who would work on a regular basis to document migratory species records. Such a 'Bird Conservation Network' would require support from various international wetland agencies to help establish an effective information and monitoring system to inform decisions and assist in developing an effective policy framework. The network would enable comprehensive and coordinated species surveys and monitoring which could lead to species recovery plans and further conservation actions as well as supporting the wise use of wetlands. To establish such a network, it is recommended that:

- a team of dedicated amateur and professional researchers, university students, hunters and managers from all parts of Pakistan establish a network for recording up to date information on the distribution and movements of migratory birds. Representation from all regions covering all habitats would be necessary to ensure equal progress in developing and delivering effective conservation action.
- two bird ringing and recording stations are established: one in the northern mountains (Karamabar valley or Chitral Valley) and another in the freshwater or coastal and marine parts of the country (Sindh or Balochistan areas falling within the central Asian flyway or along the Zhob river in Balochistan).
- a regional research project is developed including Pakistan, Iran, India and Afghanistan with scientists, volunteers and researchers to share information and develop useful conservation strategies.

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- Li, Z.W.D. & Mundkur, T. 2004. Numbers and distribution of waterbirds and wetlands in the Asia-Pacific region. Results of the Asian Waterbird Census: 1997-2001. Wetlands International, Kuala Lumpur, Malaysia.



Ferruginous Duck *Nyroca ferruginea*. Photo: Nikolai Petkov.