

## Taunsa Barrage

### Location:

30° 42' N, 70° 50' E; 20 km northwest of Kot Adu, Muzaffargarh District, Punjab Province.

Area: 6,756 ha.

Altitude: 139 m.

Biogeographical Province: Thar Desert.

Wetland Type: Water storage reservoir.

### Description of site:

A large water storage reservoir behind a barrage on the Indus River near the town of Taunsa, constructed for irrigation purposes. Five embankments project out into the reservoir and retain shallow lagoons as the water level in the main river channel falls. Land exposed at low water levels is leased to local farmers for cultivation. The depth of water in the main channel varies from 5.0 - 11.5 m. The Ph value is 6.5 - 7.0.

### Climatic conditions:

Dry subtropical climate with an annual rainfall of 200-450mm, and a relative humidity ranging from 25 - 85%. The average minimum temperature in January is 4.5° - 5.5° c, and the average maximum in June is 42° - 45° c.

### Principal vegetation:

The aquatic vegetation in the seepage lagoons includes *Carex fedia*, *Hydrilla verticillata*, *Nelumbium speciosum*, *Nymphaea lotus*, *Phragmites karka*, *Potamogeton crispus*, *P. pectinatus*, *Ranunculus aquatilis*, *Saccharum spontaneum*, *Typha angustata*, *Vallisneria spiralis* and *Zannichellia palustris*. Much of the land adjacent to the reservoir is under cultivation, mainly for cotton, sugar cane, wheat and fodder crops. Riverine forest along the Indus is dominated by *Dalbergia sissoo* and *Populus euphratica* in association with *Tamarix dioica*. Other natural vegetation includes *Acacia nilotica*, *Prosopis cineraria*, *Pisum arvense*, *Salsola barysoma*, *Cynodon dactylon*, *Eleusine compressa* and *Panicum antidotale*.

### Land tenure:

The reservoir is state owned (Government of the Punjab), and controlled by the Irrigation Department; adjacent areas are privately owned.

### Conservation measures taken:

The wetland was first declared as a Wildlife Sanctuary of 6,567 ha in 1972, the Sanctuary was re-notified in April 1983, then in July 1988 and subsequently in March 1993.

### Conservation measures proposed:

The Punjab Wildlife Department erected nest-boxes in the Sanctuary for *Dendrocygna javanica*. It has been proposed that the Indus River from Taunsa Barrage upstream to Kalabagh and downstream to Guddu Barrage be declared as a World Heritage Site for the Indus Dolphin *Platanista minor*. Some more areas on both sides of the reservoir and 3km wide area downstream of the barrage structures is proposed to be included in the sanctuary.

### Land use:

Fishing, water supply for irrigation, harvesting of reeds and recreation; agriculture, livestock grazing and forestry in adjacent areas. Some of the land within the Sanctuary is leased to farmers for cultivation during the dry season. Illegal hunting is also rampant.

### Disturbances and threats:

The main threat to the wetland at present is the occasional burning of vegetation in the seepage lagoons and in lands within the reservoir area. Fishing activities and illegal hunting by local people cause some disturbance, and there have been reports of waterfowl drowning in fishing nets. There is a proposal to construct a new flood barrage further upstream on the Indus, and this could result in reduced water levels at Taunsa Barrage.

### Economic and social values:

The reservoir is a very important source of water for irrigation, and supports a fishery worth more than five million rupees per year. It also provides excellent opportunities for scientific research and conservation education.

### Fauna:

A very important wintering area for waterfowl, notably anatidae, a breeding area for several species, notably *Dendrocygna javanica*, and a staging area for certain cranes (*Grus grus* and *Anthropoides virgo*) and shorebirds. Taunsa Barrage is the most important wintering area for the Bar-headed Goose *Anser indicus* in Pakistan; up to 430 were recorded in the early 1970's, but numbers have shown a serious decline in recent years. *Dendrocygna javanica* is a common breeding summer visitor; 325 were counted in August 1995. The rare marbled teal *Marmaronetta angustirostris* is a regular passage migrant and winter visitor in small numbers; the highest count in recent years has been 30 in September 1985. Over 24,000 waterfowl were present in mid-January 1987, including:

620 *Phalacrocorax niger*, 79 *Anser indicus*, 2780 *Anas penelope*, 770 *A. strepera*, 4,880 *A. crecca*, 270 *A. platyrhynchos*, 1,660 *A. acuta*, 390 *A. clypeata*, 4,690 *Aythya ferina*, 53 *Anthropoides virgo*, 150 *Porphyrio porphyrio* and 7,510 *Fulica atra*, along with smaller numbers of *Tachybaptus ruficollis*, *Tadorna tadorna*, *Marmaronetta angustirostris* (5), *Netta rufina* (31), *Aythya fuligula*, *Hydrophasianus chirurgus*, *Himantopus himantopus* and *Numenius arquata*.

Other waterfowl which have been recorded at the barrage include up to 180 *Phalacrocorax fuscicollis*, up to 770 herons and egrets of eight species and 210 *Platalea leucorodia*, 600 *Tadorna ferruginea*, 60 *Recurvirostra avosetta*, 110 *Limosa limosa*, 430 *Tringa erythropus*, 680 *Calidris minuta* and large numbers of gulls and terns, mainly *Larus ridibundus*, *Sterna aurantia* and *S. melanogaster*. Less common visitors include *Anhinga melanogaster*, *Anastomus oscitans*, *Ciconia ciconia*, *C. nigra*, *Pseudibis papillosa*, *Phoenicopterus ruber*, *Nettapus coromandelianus*, *Aythya nyroca*, *Rostratula benghalensis*, *Glareola lactea* and *Vanellus leucurus*.

The Indus Dolphin *Platanista minor* and Smooth-coated Otter *Lutra perspicillata* are present in the river in small numbers, and the Hog Deer *Axis porcinus* still occurs in the area, although it has been heavily persecuted. Other mammals include *Canis aureus*, *Felis chaus*, *Sus scrofa cristatus* and *Lepus nigricollis*.

The endangered *Gharial Gavialis gangeticus* has been reported at the barrage (two adults in

about 1980).

Fish species known to occur in the river and lagoons include *Ambassis nama*, *A. ranga*, *Bagerius bagarius*, *Barilius vagra*, *Catla catla*, *Channa marulius*, *C. punctatus*, *Cirrhinus mrigala*, *C. reba*, *Eutropiichthys vaccha*, *Heteropneustes fossilis*, *Labeo calbasu*, *L. microphthalmus*, *L. rohita*, *Mastacembelus armatus*, *M. pancalus*, *Mystus aor*, *M. seenghala*, *Nandus*, *Notopterus chitale*, *N. notopterus*, *Puntius sophore*, *P. ticto*, *Tita rita* and *Wallago attu*. Other aquatic fauna includes *Hirudinaria sp.*, *Rana tigrina*, *Kachuga smithi*, *Hardella thurgi*, *Geoclemys hamiltonii*, *Trionyx gangeticus*, *Lissemys punctata* and *natrrix piscator*.

Special flora values: None known.

Research and facilities:

Mid-winter Waterfowl censuses have been carried out regularly since 1973. The Punjab Fisheries Department has conducted research on the fishery resources. Punjab Wildlife Research Centre, Faisalabad have conducted regular Indus dolphin surveys in the area. An M. Sc. Zoology student of Punjab University, Lahore has writtenn thesis on Indus dolphin at Taunsa Barrage area. Punjab Wildlife Research Centre, Faisalabad in collaboration with Department of Pure and Applied Biology, Haha-ud-Din Zakariya University, Multan have started a research project on the Ecology of Indus dolphin, funded jointly by Punjab Wildlife Department and WWF-Pakistan. A project on smooth coated otters is also being funded by WWF-Pakistan. Regular wildlife surveys are being conducted by Punjab Wildlife Research Centre, Faisalabad.

Criteria for Inclusion: 1c, 2a, 2b (Rec. C. 4. 2 (Rev.))

1c. Of an outstanding hydrological, biological or ecological role, of substantial socio-economic and cultural value within the framework of sustainable use and habitat conservation.

2a. Supports an appreciable assemblage of rare, vulnerable or endangered species or sub species of plant or animal or an appreciable number of individuals of any one or more of these species.

2b. Of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna.

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