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WETLAND SPOTLIGHT

KOLLERU LAKE IN INDIA
– UNDER THREAT OF ECOLOGICAL DEGRADATION –

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Kolleru Lake is a natural inland depression formed between the alluvial plains of two great rivers, the Godavari and Krishna on the south-east coast of India. It is one of the largest freshwater lakes in India. The water-surface area and consequently the contour of the lake varies, depending on the inflow of water which is seasonal. When the water level is at 10 ft above sea level (a.s.l.) the lake spreads over an area of 900 sq. km. The lake is connected to the Bay of Bengal through a 42 km long tidal drain called the Upputeru. The lake receives water through 30 major streams and channels.

Kolleru Lake has an interesting geological and cultural history. The bed level of the lake is 3 ft below the mean sea level. The water-surface area varies from 67,500 ha at 7 ft a.s.l. to 13,500 ha at 3 ft a.s.l., the average being 30,040 ha at the 5 ft contour. There are 46 island villages and 76 shoreline villages. The main occupation of the villagers is agriculture and there are about 42,000 fishermen. A total area of about 35,069 ha below the 7 ft contour has been reclaimed for cultivation. The increasing demand for fertile land has resulted in illegal encroachment into the lake at an alarming rate, even below the 5 ft contour.

Fishery Resources

The lake used to support a major fishery consisting of carp, catfishes, climbing perches and eels with an estimated catch of over 7,000 tons/year. Since 1974 this has declined rapidly. Presently the fishery consists mostly of air-breathing fishes: *Anabas testudineus, A. oligolepis, Heteropneustes fossilis, Clarias batrachus.* The component of carp has steadily declined. About 63 species of fishes belonging to 29 families have been recorded from the commercial catches of the lake and the Upputeru drain. Prawns are also captured from July to October, the important species being *Metapenaeus monoceros* (over 90%), *Macrobrachium rosenbergii, M. malcomsonii* and *M. rude.* During the last few years a large number of fish tanks have been built in the lake area and they are encroaching even beyond the 5 ft contour, many of them spreading over 20 ha each. The species cultured are the three major Indian carps: *Catla catla, Cirrhinus mrigala,* and *Labeo rohita.* Two exotic carps, the grass carp, *Ctenopharyngodon idella* and the silver carp *Hypophthalmicthys molitrix* are also cultured on a smaller scale. A large number of fish hatcheries have also been established. The insatiable demand for freshwater fish in the major fish markets of Calcutta and other places has increased the clamour for culture as well as capture fisheries in the lake, leading to the depletion of natural stocks.

Birds

About 160 species of birds have been recorded from the lake and its surroundings, including a number of migratory species. The Spot-billed Pelican *(Pelecanus philippensis)* was abundant during the early 1960s and the area was known as the largest pelican breeding centre in the world. The Government declared the area a bird sanctuary in 1972 under the Wild Life Protection Act, but no pelicans have been seen in the area since 1974. Now, some of these birds can be seen further south on the east coast at Nelapattu near Pulicat lake.

The lake still attracts a large number of birds, especially waterfowl. During the recent waterfowl census conducted on 10th January 1988, Garganey *(Anas querquedula),* Shovelers *(A. clypeata),* Openbill Storks *(Anastomus oscitans),* Lesser Treeducks *(Dendrocygna javanica),* Coots *(Fulica atra),* and Green Sandpipers *(Tringa ochropus)* were observed in considerable numbers. Other species observed in smaller numbers were Purple Swamphen *(Porphyrio porphyrio),* Bronze-winged Jacana *(Metopidius indicus),* Red-wattled Lapwing *(Vanellus indicus),* Common Sandpiper *(Actitis hypoleucos),* Red-crested Pochard *(Netta rufina),* Little Grebe *(Podiceps ruficollis),* and Grey Heron *(Ardea cinerea).* A large number of cormorants, herons, egrets and terns were also observed.

Vegetation

The phytoplankton production is lower in the lake than in the surrounding tanks. However, almost the entire lake is covered with macrophytes, consisting of *Ipomoea aguatica, Ottelia alismoides* and *Nymphoides indicum.* Other species of plants recorded are *Limnophila indica, Utricularia* sp., *Apanogeton crispus, Vallisnaria spiralis, Chara* sp., *Nachmandra alternifolia* etc. The growth of these weeds has accelerated due to agricultural drainage released into the lake from surrounding fields that contains urea, ammonium phosphate, ammonium nitrate and potassium salts. The result is that many regions of the lake are no longer navigable.

Pollution

With a view to increasing the discharge capacity of the Upputeru, the length of the drain has been reduced by digging a "straight cut" to the Bay of Bengal, and also by dredging the drain. The result is that during the months of May and June the lake has been practically drying up since 1983. The small amount of remaining water is excessively polluted due to the fertilisers and pesticides used in the surrounding fields. Within the lake area, it is estimated that about 18,100 tons of chemical fertiliser and 1,600 tons of pesticides are used every year and their residues reach the lake through 15 major drains. In the catchment area it is estimated that 77,400 tons of chemical fertiliser and 4,560 tons of pesticides are being used every year whose residues also reach the lake.

There are 10 major industries including five sugar factories, two distilleries, one paper mill, one pesticide factory and one milkpowder factory whose untreated or inadequately treated effluents reach the lake. The sewage water from the major towns like Vijayawada, Guidvada, Eluru as well as from smaller towns in the area find their way into the lake through drains.

Conservation Strategy

1. The greed for arable land is responsible for illegal reclamation of lake bed year after year. Steps must be taken to recover the occupied land.

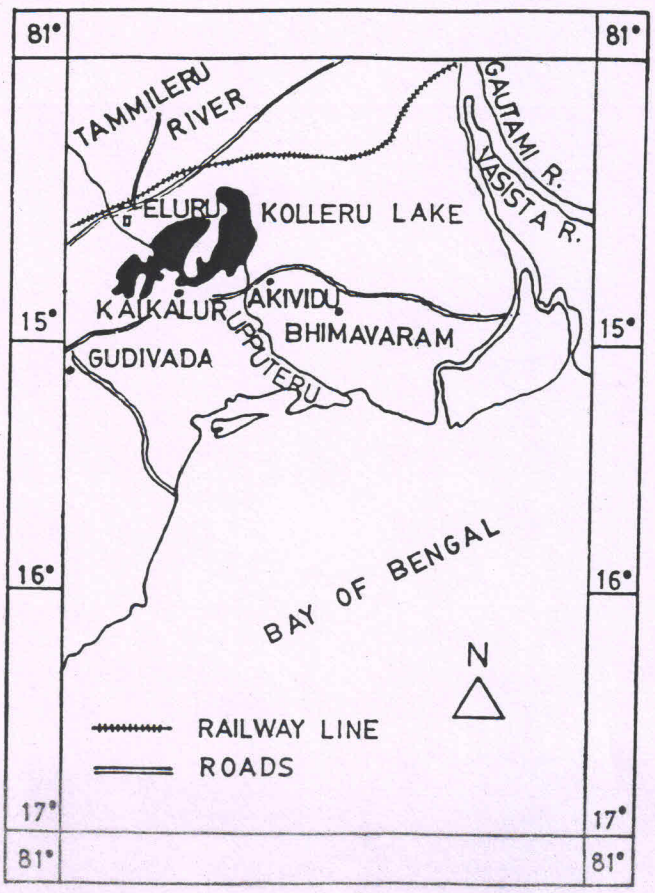
2. A large number of migratory birds are trapped and killed every year in spite of prohibitory orders. Stringent action must be taken to prevent killing of birds not only in the lake area but also further east where they are trapped in their hundreds when they arrive for night-time feeding.

3. Traditionally, parts of the lake area are auctioned for fishing resulting in the filtering of every litre of water and leading to the depletion of commercial and non-commercial fish stocks. Birds are also affected as their food is becoming scarce. A moratorium should be declared on all kinds of fishing for two years and compensation paid to fishermen.

4. A regulator must be constructed across the Upputeru to stabilise the lake water at 5 ft a.s.l. during all seasons with a possible flood level of up to 7 ft a.s.l. during the monsoon.

5. People must be educated about the value of preserving the lake so that they will not react against conservation measures.

There is immediate need to bring pressure on State and Central Governments by national and international organisations to preserve Kolleru Lake – a unique picturesque wetland ecosystem.



Map 4