

## RIVER DOLPHINS OF ORISSA, INDIA

LALA A. K. SINGH

Research Officer (Wildlife), Forest and Environment Dept., at: Similipal Tiger Reserve, Khairi-Jashipur, Pin:757 091.

---

### S U M M A R Y

Deductions have been made to suggest that historically Orissa had a good population of *Platanista gangetica* along with two sympatric reptiles, *Gavialis gangeticus* and *Trionyx gangeticus*. Continued occurrence of *P. gangetica* to recent years refer to lower Mahanadi (pre-1950s), Chilika lake (1987) and the estuaries of rivers Brahmani-Baitarani (1990). The reasons for isolation of the Orissan population of *P. gangetica* from the main Gangetic population is geologic. The reasons for the decline in population of the dolphin in Orissa are stated to be (a) geographical isolations and genepool corrosion, and (b) habitat deterioration including competition with humans for resource. A systematic Project-Dolphin is urged for the state of Orissa for purposes of research and conservation.

### I N T R O D U C T I O N

The state of Orissa in eastern India have the country's 9.38% (1,37,022 ha) natural wetlands because it has a large number of rivers, lakes, impoundments and a coastline almost as long as the length of the state (Singh, 1991a). Before draining into the Bay of Bengal estuaries are formed by all the rivers, major among which are the Mahanadi, Brahmani and Baitarani. All three rivers are interlinked through the estuaries. River Mahanadi is connected to Chilika lake through two rivulets (Fig-1). Hence, these wetlands have shared similar faunal compositions where species habitat specificity, such as salinity, is not limiting. All three wetlands are recognised, internationally (Scott, 1989).

As regards the river dolphins of Orissa, historically they may have been plenty people. Recent information about these animals are, however, scarce. In the following an attempt has been made to (1) generate a picture of occurrence of *P. gangetica* in the river Mahanadi and the interlinked wetlands, and (2) put forward the probable reasons for their decline in numbers.

### O C C U R R E N C E

Annandale (1912) mentions that *Gavialis gangeticus* (Reptilia, Crocodilia), *Trionyx gangeticus* (Reptilia, Chelonia) and *Platanista gangetica* have the same range of distribution.

In an all-India scene, *Trionyx gangeticus* still occurs in the river systems of Ganges, Indus and Mahanadi, and its presence in Narmada and Tapi need substantiation (Das, 1985).

Similarly, before the beginning of the conservation programme gharial occurred, naturally in the river systems of Ganges, Brahmaputra and Mahanadi, indicative only of a much wider range of

distribution (Fig.2) (Singh, 1991b). "A geological link of gharials of Mahanadi with those of the Ganges appears probable" (Singh, 1991b).

In the absence of fossil data although it is difficult to construe a zoological link of *P. gangetica* between the Ganges and the Mahanadi, the probability of such a link cannot be ruled out particularly in view of supports received from other sympatric species, namely *G. gangeticus* and *T. gangeticus*.

Within the state of Orissa *G. gangeticus* occurred in rivers Mahanadi, Brahmani and Baitarani (Singh and Bustard 1982, a, b) and Chilika lake (Anandale 1915, Sinclair 1987). *Trionyx* occurs in all the three rivers and Chilika lake (unpublished obs.). With this background information on the two sympatric species, available information on *P. gangetica* are presented below for the Orissan wetlands.

1) During my work in Mahanadi (1975-1981, 1987-1988) I never sighted a dolphin but I had definite information about the dolphin "which was very common during 1950s in the lower Mahanadi, upstream of tidal limits" (Singh and Sharma 1985). No proper survey has been made in the Mahanadi delta to give a date of their disappearance from the area if at all they do not occur now.

2) The Gangetic dolphin, *Platanista gangetica* was documented by Anandale(1915) in Chilika lake. Since then very little work has been done on the fauna of Chilika lake (Rao and Rao 1988) and certainly no work has been attempted on dolphins of the lagoon. Only Sinclair (1987 p.332) mentions that dolphins are occasionally sighted in the mouth of the Chilika lagoon.

3) Sri B.N. Nayak, Wildlife Warden and Dr. S.K. Kar, Research Officer of Bhitarkanika Sanctuary univocally expressed (Pers. Comm., dt.03 July 1990, Bhubaneswar) that at least two species of dolphins, including the gangetic dolphin, have been sighted in the estuaries and coast of Bhitarkanika Sanctuary. It is a sanctuary situated in the estuaries of Brahmani-Baitarani rivers of Orissa. It is primarily managed for the saltwater Crocodile (*Crocodylus porosus*), the Olive Ridley Sea Turtle (*Lepidochelys olivacea*), the mangrove forest and other ecological associates. Fishing trawlers do operate in large numbers and are threats to the turtles. The present status of the cetaceans and the extent of threats posed to these are unassessed.

4) A definite Oriya word Susumer for river dolphins indicate that even if these mammals are rare at present, these were once very familiar with the riverside village folks.

## REASONS FOR DECLINE

The following extract from Singh (1991b) for *Gavialis gangeticus* have a general relevance to *P. gangetica*, as well.

"Geographic isolation of the population of gharial in Mahanadi may have occurred over geologic time, followed by localisation of the main breeding populations in recent historical times. These appear probable.

"Isolation of a population, and gradual suffering from an erosion in its gene-pool because of reducing number of breeding individuals, lead to extinction of the species in the area (see: Frankel and Soule, 1981).

"Therefore, in the case of Mahanadi, gharial have suffered first, an evolutionary isolation; and third, an erosion in genetic constituency of the population due to fast reducing number of breeders. These chain of events from geologic through historic to recent time may have led gharials in Mahanadi to a stage of near extinction".

Singh, L. A. K. (1992): River Dolphins of Orissa, India. Abstract in: *Seminar on Conservation of River Dolphins of the Indian Subcontinent*. 18-19 August, 1992. New Delhi: pages 13-14.

3

As with all wetland fauna, habitat degradation in recent times may have seriously affected the population of *P. gangetica*. The qualitative disruptions in links between Chilika lake and Mahanadi, and between Mahanadi and the Brahmani-Baitarani unit were due to siltation, increase in human dimensions for fishing, and navigation.

The Chilika lake has shrunk from 2200 Km<sup>2</sup> area in the past (Singh, P., 1991) to only 805 sq. km. by the summer of 1990 (September, 1991). A survey in 1970 indicated that every year Chilika received 13,000,000 metric tonnes of mud, silt and other wastes. During 1924 the average depth of Chilika was 2.4m. This has reduced to 0.51 to 1.6m in 1991 (Senapati, 1991). This provides a general impression of the rate at which the coastal freshwater and estuarine wetlands are reducing in depth and extent.

Bhanja Deo (1979) provides a relatively detailed account of the recent changes in appearance of the major river systems of Orissa. "The Mahanadi was becoming a smaller river" due to the Hirakud Dam and increased loads of sand and silt (Bhanj Deo 1979, Singh 1977). Contrary to the claims from Engineers, regulated flow from the Dam and barages at Mundali, Naraj and Cuttack pushes the bed material inadequately preventing its carriage to the sea and maintenance of the depth of the main channel of the river. Brahmani-Kharasuan-Baitarani rivers have become shallow in their lower stretches (Bhanj Deo, 1979) making these increasingly unsuitable for habitation when the dolphins occurred in easy-detectable numbers. The decreasing depths and appearance of sand bars restricting free movement of dolphins have similarity with the description for Chambal (Singh and Sharma, 1985) which even does not have a deltaic situation of Orissa.

Some of the human dimensions which are considered incompatible to dolphins' survival and are vigorous in the Mahanadi-Brahmani-Baitarani-Chilika systems are increased incidences of fishing and navigation. The change of fishing gear to nylon set-nets during 1950s (FAO 1974, Kanungo 1976) have been most damaging directly to the aquatic vertebrates as well as the general habitat conditions. Dolphin do get caught in nylon set nets (Singh and Sharma, 1985). Collection of fish-spawn and increased incidences of fishing in Mahanadi (Singh, 1991b) and Chilika (Senapati, 1991) bear for dolphins direct competitions with humans for food resource. Data from Chilika indicate that the fish production level has reduced for 8590 tonnes in 1985-11986 to 4273 tonnes in 1990-91 (Senapati, 1991). This is indicative of the previous and prevailing trend in other wetlands which the dolphin habitat.

I have only an impressionistic data that the level of motorised as well as manual navigation have increased several folds in the lower reaches of the wetlands under reference. These must have added to the levels of pollution- detailed studies on which are needed to be undertaken.

## DISCUSSION

The preceding account is entirely based on readily accessible literature and personal experiences. This account is optimistically viewed as a stimulator to initiate a proper study on the dolphins of Mahanadi-Brahmani-Baitarani-Chilika systems of Orissan wetland. A conservation-biased Project Dolphin should aim towards

- (1) status surveys,
- (2) environmental impact assessments, and
- (3) preparation of a comprehensive management plan for conservation and research.

Singh, L. A. K. (1992): River Dolphins of Orissa, India. Abstract in: *Seminar on Conservation of River Dolphins of the Indian Subcontinent*. 18-19 August, 1992. New Delhi: pages 13-14.

4

Such a project will be complementing the Orissan efforts already made to manage riverine and estuarine wetlands under the Crocodile conservation project since 1975, and take note of Jones (1982) suggestion to restock Mahanadi with *P. gangetica*.

## ACKNOWLEDGEMENTS

I am grateful to the Govt. of Orissa, Wildlife wing for all facilities to work.

## REFERENCES

Anandale, N. (1912): Zoological expedition to the Abore Expedition-II. Reptilia. Rec. Indian Mus., VIII:38.

Annandale, N.(1915): Fauna of the Chilika Lake. Reptiles and Batrachia. Mem. Ind. Mus., V: 167-174.

Bhanja Deo, S.N. (1979): Flood Control and allied problems of Orissa Rivers. Govt. of Orissa.

Das, Indraneil (1995): Indian turtles – A field guide, World Wildlife Fund –Indian, Eastern Region.

FAO (1974): India: A preliminary survey of the prospects for Crocodile farming. Based in the work of H.R. Bustard. FO: IND/71033:1-15.

Frankel, O.H. and Soule, M.E. (1981): Conservation and evolution. Cambridge University Press, Cambridge etc.

Jonnes, S (1982): The present status of the Gangeticus susu, *Platanista gangetica* (Roxburgh), with comments on the Indus Susu, *P. minor* Owen. In Mammals in the seas, FAO Fisheries Series No.5, vol.IV, ISBN 92-5-100514, FAO, Rome.

Kanungo, B.C. (1976) : An integrated scheme for conservation of Crocodiles in Orissa with management plan for Satkoshia Gorge and Bhitarkanika Sanctuaries. Orissa Forest Deptt.

Rao,K.V.R. and Rao,C.A.N. (1988): Fauna of the Chilika lagoon-A status Appraisal, pp.86-88. In Chilika- The Pride of our Wetland Heritage, Orissa Environmental Society.

Scott, D.A. (1989): A Directory of Asian Wetlands. IUCN, The World Conservation Union, Switzerland. (pp.453-461).

Senapati, R.M. (1991): “Chilika Bhabisyata” (Future of Chilika). In Oriya in Te Prajatantra dt.4.11.91, Cuttack.

Sinclair, T (1987): National Parks and Sanctuaries. In: Insight Guides: Indian Wildlife- Srilanka, Nepal. The Great Adventure Series, APA Productions.

Singh,L.A.K. (1977): Conservation of nature and future of mankind (Man and Crocodile) Tiger Paper

- Singh, L. A. K. (1992): River Dolphins of Orissa, India. Abstract in: *Seminar on Conservation of River Dolphins of the Indian Subcontinent*. 18-19 August, 1992. New Delhi: pages 13-14.  
IV(2): 16-17.
- Singh, L.A.K. (1991a): A framework for sustainable use and conservation of Orissa's wetland Resource. In Souvenir, National Environmental Society Academy- Orissa Chapter.
- Singh, L.A.K. (1991b): Non-survival of gharial *Gavialis gangeticus* (Gmelin) (Reptilia, Crocodilia, Gavialidae) in river Mahanadi, Orissa. (Draft) Technical Report, Dec.1991. Wildlife wing, Forest and Environment Deptt., Govt. of Orissa. 17 tab., 4 figs. 71 pp.
- Singh, L.A.K. and H.R. Bustard(1982a): Geographical distribution of the gharial *Gavialis gangeticus* (Gmelin) in Orissa, India. *British Journal of Herpetology* 6(7): 259-260.
- Singh, L.A.K. and H.R. Bustard(1982b):The extinction of the gharial *Gavialis gangeticus* (G melin) from the Brahmani and Baitarani rivers in Orissa. *J. Bombay nat. Hist. Soc.* 79(2): 424-426.
- Singh, L.A.K. and Sharma,R.K. (1985): Gangetic dolphin, *Platanista gangetica*: Observations on habits and distribution pattern in National Chambal Sanctuary. *J. Bombay nat. Hist. Soc.* 82(3): 648-653.
- Singh,P. (1991) : “Chilikara Druta Abakshyaya: Manabiya Atyacharara Anta Keunthi ?” (In Oriya) In: Samaja, dt.08. Dec. 1991, Cuttack.