STUDY ON SOME ASPECTS OF IRRAWADY RIVER DOLPHIN *ORCAELLA BREVIROSTRIS* GRAY IN CHILIKA LAKE, ORISSA

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Introduction

The Dolphins belong to the family Delphinidae with a total of 32 species in 17 genera. Irrawady Dolphins, one of the smaller Cetaceans are found in Chilika. Occurrence of Irrawady river Dolphin (Snub-nosed Dolphin), *Orcaella brevirostris* (1866) was first recorded in good numbers at different parts of the Chilika lake by Annandale (1915). Irrawady Dolphins are found commonly in the South-East Asian waters inhabiting the rivers, estuaries, backwater brackish water lagoons and mangrove creeks that are connected with Bay of Bengal and also in the Malay Archipelago and the coasts of Northern Australia (Anderson, 1878; Annandale, 1915; Johnson, 1964; Ellis, 1983; Lyall-Watson, 1985). The finding of Annandale confirms that they are available in brackish water lagoons. In Oriya, it is called as 'Sishumar' or 'Bhuasuni Mugger' or 'Bayisa Mugger' (Kar and Sahu, 1993) and in Malaya it is known as 'Lumbalumba' (Dhandapani, 1992).

After a gap of about 70 years, the Zoological Survey of India had again conducted a survey of the Dolphins in the Chilika during 1985-87. During the course of the authors' study on ecology of aquatic birds in Chilika from 1992-93 to 1994-95, some observations were made on the movement, feeding and other behavioural aspects of the Dolphins.

Study Area

Chilika is the largest brackish water wetland in Asia and is one of the Ramsar sites. It lies between 19° 28' - 19° 54' N and 85° 06' - 85° 35' E and spreads over three Districts - Puri, Khurda and Ganjam. During the study period, the air temperature at Nalaban ranges from 18°C to 40°C (average 26.3°C) and the average water temperature was 22.1°C (range : 19°C to 24°C). The relative humidity ranges from 75% to 85% and the average annual rainfall recorded at Parikud and the camp site was 1100 mm. The salinity varies from place to place and from season to season (1.2 PPT in October to 15.5 PPT in June).

Specimens Examined

During the course of our study, seven dead specimens were seen floating, out of which five specimens were severely decomposed and were beyond handling. Among the seven dead specimens, three were seen floating in the Northern sector of Nalaban, two near Balugaon and one each near Parikud jetty and Kalijai island, respectively. Only two dead specimens, one of the two from Balugaon and the other from Parikud jetty were towed on to the

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shore on 07.12.1994 and 31.01.1995, respectively for recording their measurements. Besides these seven carcasses, three skeletons of these Dolphins are available at the Museum of Nandankanan, State Museum, Bhubaneswar and the Interpretation Centre at Balugaon. This paper deals with the morphometry of two dead Irrawady river Dolphins and emphasizes preservation of this isolated population along with their habitats.

The body is torpedo-shaped (Dhandapani, 1992) with small beak, rounded head, downwardly pointing mouth, everted lips that come to a point in front and very small eyes, short but distinct neck. Flippers broadly triangular; dorsal fin small, more or less sickle-shaped and placed on the posterior half of back. The body is bluish-grey above and lighter and paler below. Melon is present on the forehead, a blow-hole between two eyes. The tail is typical with a notch. The measurement of the specimens are given in Table 1.

Table 1

Measurements of dead specimens examined

Site	Specimen-I Balugaon 07.12.94	Specimen-II Nalaban West 31.01.95
	Length (cm)	
Upper jaw to blowhole	24	29
Pectoral fin	44	69
Dorsal fin	135	135
Tail	230	240.5
Eye	20	21
Lower jaw to tail	198	211
Pectoral fin	37	39
Genital opening to tail	55	71
Eye to eye	34	40.5
Eye to blowhole	13	18
Width of blowhole	3	4.5
Width of lower jaw	16	17.5
Width of upper jaw	15	16
Girth :		
Around neck	86	98
Pectoral fin	107	135
Belly	123.5	138
Genital hole	72	80.5
Tail base	20	26.5
Teeth :		
Upper jaw	14	14
Lower jaw	14	14
Dorsal fin :		
Backward curve	7.2	8.0
Base	12.5	16.0
Upper crest	15.0	21.0
Pectoral fin :		
Base	8.5	12.0
Lower crest	30.0	29.5
Upper crest	40.5	43.0
Tail :		
Base	10.0	13.0
Base to tip	18.0	18.0
Side length	41.5	45.0

Status Survey

During the survey, live animals were seen in the lake frequently in winter and summer but less frequent in the rainy season. They were seen frequently in the west side of Nalaban, Chemuta, Parikud, Kalijai which are comparatively deeper area. The Southern sector is deeper but due to intensive fishing activities, Dolphins are rarely seen. The distribution of Dolphins in the lake is shown in Fig. 1. In summer months the sighting success of Dolphins in the Central sector and Southern sector was less i.e. two parties consisting of two to four Dolphins, in comparison to the winter months. In the rainy season almost no Dolphins are seen in Central and Southern

sectors. But in the Northern sector Dolphins are seen invariably throughout the year.

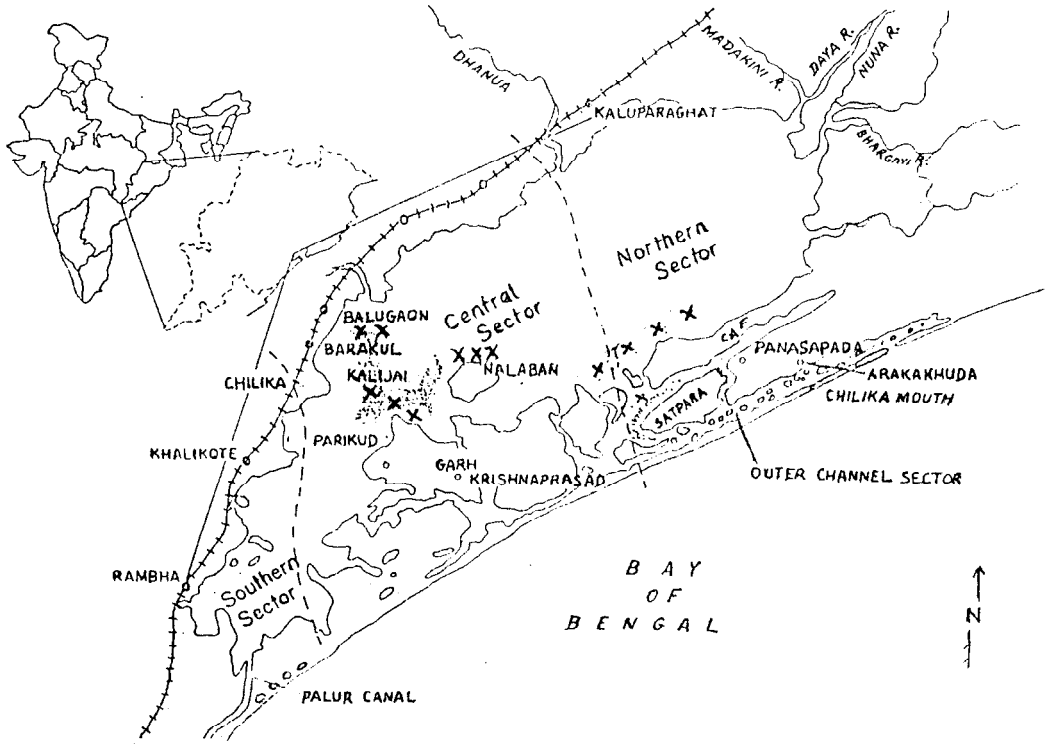
Similar observations were made by Dhandapani during his study on Dolphins in 1985-87 (Dhandapani, 1992). Annandale (1915) highlighted that these Dolphins were present in the outer channel of the lake throughout the year and found in parties of three or four. During this period also they were found frequently in the outer channel and Satpara area in comparison to other areas.

The reason for occurrence of Dolphins in these sectors has not yet been thoroughly studied, but some observations in this regard has been summarised below :

(a) Dolphins prefer the area where the human activity is less. They are more often seen in the sanctuary since the human activity such as fishing and plying of boats was very negligible.

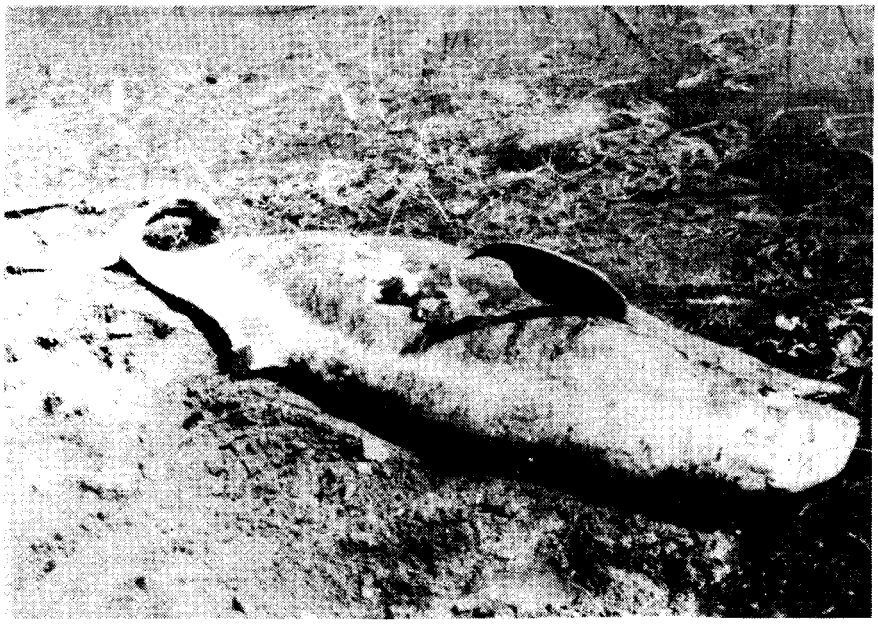
(b) Dolphins prefer areas having clear water and suitable water depth over 1.5m than weed infested area (primarily *Potamogeton pectinatus*). The East and South side of Nalaban sanctuary, Bhusandpur, Nuapada, Soran areas have more thick weed than the other sides and probably for this reason the

Fig. 1



Locations showing incidence of frequent sightings of Dolphins in Chilika

Fig. 2



Dead Irrawady Dolphin in Chilika lake

Fig. 3

Head portion of a dead Dolphin showing dention and everted lips

Dolphins are not seen in those areas.

(c) Availability of food plays an important role for movement of the animals. The main food of Dolphins are crustaceans and fishes (Anon., 1994). The availability of fish in the outer channel and in the Sanctuary was more than the Southern sector. Hence Dolphins are found frequently in these areas.

(d) Environmental parameters such as temperature, salinity, pH, dissolved oxygen, alkalinity of water in different sectors might be playing important role in their status and distribution at various sectors which needs thorough study.

Behaviour

Dolphins are aquatic mammals. All their activities are restricted to aquatic environment. They are seen for a very brief period in the process of diving. Only the melon and the dorsal fins are visible about the water surface. This activity is noticed time and again till the animal is within the range (200 - 300 m) and provided they are undisturbed.

In the sanctuary area, two to three parties, each consisting of two to four Dolphins are seen diving in pairs. They usually dive in irregular manners and move in a faster pace which can be seen from the surface of water.

They are gregarious in nature. During the study period two solitary Dolphins were seen on two occasions in Nalaban.

According to Annandale (1915) "Out in the channel they commonly follow boats". Such behaviour was not observed during the study.

Threat

Dhandapani (1992) emphasized the causes for the decline in Dolphin population in the lake. According to him these were (i) merciless killing of the species for the sake of their oil, and (ii) changes in the environmental conditions that lead to the destruction of their habitat.

It has been observed that the major cause of decline of Dolphin population is the indiscriminate intensive fishing in the lake and use of nylon nets of various mesh-sizes. But killing of the species for the sake of their oil has not been observed.

Due to rapid eutrophication and siltation of the habitat, free movement of the animals is restricted. At present hardly four to five pockets (Kalijai, Nalaban, Pathara, Satpada and outer channel) are left where the animals are seen. Dhandapani (1992) has indicated that the silt deposits of several decades made the margin of the lake shallower so it is inaccessible for the Dolphins for their activity. We agree with the views of Dhandapani and this problem is becoming acute day by day.

Gradual increasing in number of mechanised boats in the lake has been posing threat to the population of Dolphins. So also pollution from sewage and industry at several locations also play an important role in degrading the habitat of Dolphins.

Recommendations and Conclusion

The Irrawady Dolphin, *Orcaella brevirostris* Gray is included in the Schedule-I of Wildlife (Protection) Act., 1972 (amended in 1991) and regraded as a endangered animal as per IUCN Red Data Book. The following recommendations may be

implemented for protection, preservation and propagation of the aquatic mammals along with its dwindling habitat conditions :

1. Potential Dolphin areas/pockets should be identified and fishing should be completely banned. In other areas of the lake, gill-netting should be banned.

2. Plantation in catchment areas should be made to check drainage of top soil to the lake to prevent heavy siltation.

3. Fragmentation of the habitat due to intensive prawn culture should be stopped.

4. Research station may be established in Satpara for regular monitoring and to study ecological aspects of Dolphins.

5. The outer channel along with adjacent suitable areas should be declared as a Dolphin Sanctuary as per provision of the Wildlife (Protection) Act as early as possible for protection and propagation of this highly endangered species.

6. Increase in number of mechanised boats for fishing and transporting etc. in Chilika is creating noise as well as oil pollution. Steps may be taken to check/ control the plying of mechanised boats inside the potential Dolphin areas.

7. Wildlife awareness programme along with audiovisuals should be taken up among the local fishermen community to educate them regarding the conservation of Dolphins and the fragile Chilika ecosystem.

Acknowledgements

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SUMMARY

Chilika wetland ecosystem in Orissa provides an ideal habitat to a small population of Irrawady river Dolphins *Orcaella brevirostris*. Its occurrence was first recorded in Chilika by Annandale during 1915 and subsequent studies confirmed their existence in this brackish water lake. The present study deals with status, movement, feeding, morphometry and behavioural aspects of this threatened cetacean and recommends preservation of this isolated population along with their habitats.

उड़ीसा की चीलिका झील में इर्रावदी नदी शिंशुमार, *ऑर्केल्ला ब्रीविरोस्ट्रिस* ग्रे के कुछ पक्षों का अध्ययन

एच०के० साहू, एस०के० कार व एस०के० पटनायक

सारांश

उड़ीसा की चीलिका आर्द भूमि परिस्थिति-संहति इर्रावदी नदी शिंशुमार, *ऑर्केल्ला ब्रीविरोस्ट्रिस*, की छोटी सी संख्या के लिए आदर्श प्राकृतावास प्रस्तुत करती है । यहाँ चीलिका झील में इसका पाया जाना सर्व प्रथम अन्नाडेल ने 1915 में अभिलिखित किया और उसके उपरान्त किए गए अध्ययनों ने इस झील के नमकीन जल में इसके मिलने की पुष्टि है । प्रस्तुत अध्ययन में इस संकटापन्न तिमिगण प्राणि की स्थिति, गतिविधि, पोषण, रचनामापिकी और व्यवहारगत पक्षों का विचार किया गया है तथा अलग-अलग पड़ी इस प्राणि संख्या और इनके प्राकृतावास को संरक्षित करने की सिफ़ारिश की गई है ।

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