

# CMFRI bulletin 44

Part Three

FEBRUARY 1991



## NATIONAL SYMPOSIUM ON RESEARCH AND DEVELOPMENT IN MARINE FISHERIES

**MANDAPAM CAMP**

16-18 September 1987

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Papers Presented  
Sessions V, VI & VII

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CENTRAL MARINE FISHERIES RESEARCH INSTITUTE  
(Indian Council of Agricultural Research)  
P. B. No. 2704, E. R. G. Road, Cochin-682 031, India

Central Marine Fisheries Research Institute  
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**Limited Circulation**

## RESEARCH NEEDS FOR THE BETTER MANAGEMENT OF DOLPHINS AND DUGONGS OF INDIAN COAST

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### ABSTRACT

Taxonomy, age and growth, length range, reproductive biology, population parameters, seasons of occurrence and by-catch of dolphins and dugong are discussed. The research needs and areas requiring urgent attention are brought to focus. Suggestions are made for designing gill nets that can be detected by dolphins and preventing them from getting entangled. Safe guarding the habitat of dolphins and dugongs from degradation is suggested.

### INTRODUCTION

The conservation of marine mammals is receiving global attention due to the endangered status of some of them and also because of declaration of Indian Ocean as a sanctuary for the marine mammals (James, 1985; Bhatt, 1985). James and Mohan (1987) recorded 14 species of Odontoceti from the Indian coast. While studying the osteological characters of the Indian dolphins, Mohan (1985, a) found that the common species of dolphins caught in the gill nets along the south west coast of India are *Stenella longirostris*, *Tursiops truncatus* var. *aduncus*, *Delphinus delphis* var. *tropicalis*, and *Sousa chinensis*.

The incidence of occurrence of dolphins in gillnets along the southwest coast from Goa to Cochin is higher than in other parts of the coast. In recent years dolphin by-catch has increased with the increase of gillnets and their extended operation in the sea due to the introduction of out board engines for the gill net fishing.

We have fairly good information on the distribution, seasonal occurrence, food and feeding habits, osteology and behaviour of the dugongs of Indian coast (Jones, 1959; Nair *et al*; 1975; James, 1974 and Mohan, 1980; 1982). However our information on their population parameters, reproductive biology and age structure are far from satisfactory and requires immediate attention.

### DOLPHINS

#### Taxonomy

The species of dolphins occurring along the Indian coast show certain morphological differences from the same species found in Pacific and Atlantic oceans. The zygomatic width of rostral length ratio of *Delphinus delphis* of Indian coast was 2.14 to 2.15 whereas the ratio was 1.8 to 2.03 in the dolphin of South African coast. The zygomatic width-rostral length ratio of *Stenella longirostris* was found to be 1.48 to 1.55 whereas it was 1.53 to 1.57 in Costorican, Eastern Pacific and Hawaii specimens (Perrin, 1975). In *Sousa chinensis* and *Tursiops truncatus* var. *aduncus* (Fig. 1) the differences in the ratios between the species occurring in India and other parts of the world is not much distinct. Still more detailed study is required involving more specimens from different areas. There is need to investigate the regional variation within the species.

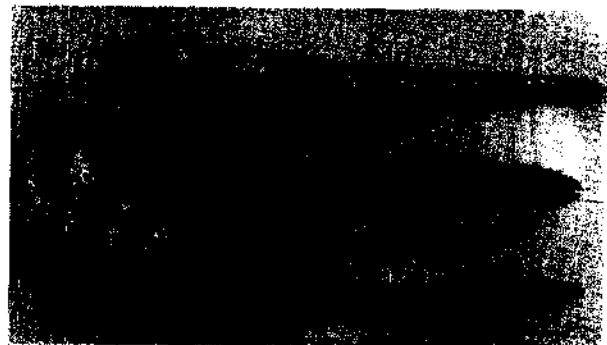


Fig. 1. Upper and lower jaws of *Tursiops truncatus* var. *aduncus* with dentition. Condylar basal length :495 mm.

Though about 33,224 gill nets are operating in Kerala, Karnataka and Goa coasts with different mesh size (George *et al*, 1981), dolphins are landed by the nets with large mesh size of 90-130 mm. These nets are commonly known as 'Ozhuku vala' (Drift net) and land fishes like *Cy-bium commersoni*, sharks and tuna. These nets operate at about 20-30 fathom at a distance 20-40 km from the shore. The recent introduction of out board motors have extended the operation of these nets.

Dolphins are entangled in the nets by accident or while trying to feed on the fishes caught in the nets (Fig. 3). Very often the dolphins damage the nets in their effort to free themselves. Fishermen do not always take the dolphins to the shore as it is difficult to handle them and also as it fetches comparatively low price than the fishes. Fishermen consider them as a menance and are willing to accept if methods are suggested for preventing the dolphins from getting entangled in the nets.

If the nets are made detectable to dolphins, they may not get caught. The large meshes can be intermixed with smaller meshes of 15-20 mm at an interval of one meter so that the net can be detected by the dolphins. It was found that the dolphins cannot detect a net with stretched mesh of more than 100mm (FAO, 1978). The nets also can be provided with sound source or reflectors which can alert the dolphins.



Fig.3. By-catch of dolphins in the Calicut fish market: *Stenella longirostris* and *Tursiops truncatus var.aduncus*.

## STUDIES ON CAPTIVE ANIMALS

In India information on the dolphins kept in captivity is restricted to the observation of Mohan (1983) on the *Sousa chinensis* at the Calicut coast. In developed countries, most of the information on the behaviour, age and growth and reproductive biology come from observation made on the captive animals. These area of study also need more attention though it involves funds.

## DUGONGS

We have fairly good information on the taxonomy, distribution, food and feeding habits of dugongs along the Indian coast. But the areas like reproductive biology, age and growth in nature, and population estimate are far from satisfactory.

### Taxonomy

Though it was thought that there may be more than one sub-species of dugongs in its range of distribution, it is now observed that there is only one species of dugongs and difference may be due to local variation (Nair *et al*, 1975).

### Age and Growth

Age and growth was observed on the dugongs kept in captivity (Fig.4). It was estimated that they may grow about 10cm per year and attain a length of 2.7m in 20 years (Nair *et al*, 1975). But in a recent study 45 growth rings were observed in a tusk of dugong from gulf of Mannar measuring 2630mm and it was supposed to be 45 years old. However, the relation between the rings in the tusk and the age has to be verified.



Fig.4. Two dugongs, *Dugong dugon* which were kept in captivity in the Regional Centre of CMFRI, Mandapam Camp.

to the marine mammals. These agencies (Forest Department) should be briefed periodically regarding the protection aspects.

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