MARINE BIODIVERSITY CONSERVATION AND MANAGEMENT

Edited by

N.G. Menon and C.S.G. Pillai

ICAR

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

TATAPURAM P.O, COCHIN-682 014

1996

XII. CONSERVATION OF MARINE MAMMALS

P. BENSAM AND N.G. MENON
Central Marine Fisheries Research Institute, Cochin

Where economic considerations of the common man mask and overrule his enviromental thinking and rationale as at present, any attempt at protection of these vulnerable resources is possible only through a cooperative spirit and voluntary involvement at protection and conservation, rather than by enforcing legislation.

INTRODUCTION

Marine mammals include about 87 species of whales, dolphins, propoises and dugong in the world. They are some of the largest mammals on the globe. These animals have been hunted from time immemorial in various parts of the world for their flesh and other products. But due to their large size, docile nature, low birth rate and long life span, they are highly vulnerable and overexploited, eventually reaching an endangered state at present. Hence there has been an increasing global awareness to save them from extinction; and most of the countries have enacted appropriate laws to conserve these resources.

In the seas around India, there are 22 catalogued species of marine mammals, frequenting the coastal waters mostly for feeding or breeding, often individuals get entangled in fishing gears such as gill nets, trawl nets and purse seines (James and Lal Mohan, 1987). Compared with other marine living resources, there has been no organised fisheries for the marine mammals in India. Perhaps the only exception is for the dugong in the Gulf of Mannar and Palk bay. But, with the declaration of the dugong as an endangered animal under the Indian Wildlife (Protection) Act 1972, the above fishery has been banned. This chapter deals with the present status of our knowledge on this group in India and draws attention to the imperative need for their conservation.

PRESENT STATUS

Data on Marine mammals frequenting the seas around India are mostly drawn from their capture and/or stranding, reports from different parts of the coast as well as based on occasional observations on their behaviour.

(A) WHALES :

The whales constitute the most dominant group of marine mammals. Although they are denizens of temperate and polar oceanic waters, they migrate to tropical waters for breeding and/or escaping extreme climatic conditions during certain seasons. Their body is protected by a thick layer of oil-rich blubber beneath the skin which acts as a thermal insulator, a store of energy for long migrations and plays an important role for maintaining hydrostatic bouyancy. Usually whales are found in the upper few metres of the sea; but are capable of extensive deep dives. Based on the presence of teeth and baleen plates in the jaws, the whales are classified as toothed whales (Odontoceti) and baleen whales (Mysticeti), the former mostly feeding on fishes and cephalopods while the latter mostly on plankton such as euphausids by a filter feeding mechanism and sometimes inclusive of pelagic fishes and cephalopods.

Scientific data on whales from Indian waters are scanty and the available knowledge is based on information from a few dead carcasses that were washed ashore in different parts of the coast from time to time. The plausible cause for such strandings is their inability to determine and avoid shallow areas, caused by parasitic infestations of the organs connected with sonar direction. Hence, such whales get unknowingly stranded in gently sloping beaches, murky waters and tidal sites.

(a) Toothed whales

(1) Sperm whale, *Physeter macrocephalus* Linnaeus

This is a gregarious and polygamous whale, migrating to tropical seas in schools of 15-20 individuals or more during winter season. Juveniles and females are generally restricted to equatorial and sub-

tropical waters. Gestation period lasts for about 12-15 months and usually a single calf (rarely two) is born. The calf at birth is less than 5 m long and about 0.8 t in weight. Males attain sexual maturity when they reach about 13.5 m and females about 8.4 m. "Ambergris", a derivate from this whale is found in the intestine and is used as a fixative in perfume and cosmetic industries. Pieces or lumps of "Ambergris" are washed ashore (James and Soundarrajan, 1979).

From the year 1890 till todate, there are 20 strandings of this species (one specimen on each occasion) along various parts of the Indian coast, including Lakshadweep islands. They ranged in length from 3.7 to 17.4 m weight from 0.7 to 65 t and in six cases they were alive when stranded. The maximum period of survival after stranding was for eight days in the case of a male of about 9 m length at Tranqebar, Tamilnadu, in 1982. In the past about 100 years, the strandings of this species are reported mostly from areas below Lat. 15°N and 45% are from the island environment in the Gulf of Mannar and Lakshadweep. The strandings were usually during October-February period, with peak in November-December.

(2) Pigmy sperm whale, *Kogia breviceps* Blainville

It is a rare species in Indian waters and its strandings were reported only on two occasions, one in 1866 at Visakhapatnam and the second in 1925 at Trivandrum.

(3) Cuvier's Beaked whale, *Ziphius cavirostris* Cuvier

A single male specimen of this rare species was stranded in the reef flat of Minicoy atoll in Lakshadweep in 1982. It comes under the family Ziphiidae, characterised by a snout drawn out into a toothed beak. The species grows to 9.7 m long, while the stranded animal was 5.6 m in total length.

(b) Baleen whales

There are 74 reports of baleen whales stranded along Indian coasts between 1874 and 1993. Among these in 26 cases ranging from 0.9 to 30 m, the specific identities were not documented mostly because of the decomposing state of the individuals. Age determination is

possible from the numbers of laminations in the ear plugs, the ripples on the baleen plates and of the corpora albicantia of the ovaries.

(4) Blue whale, *Balaenoptera musculus* Linnaeus

Blue whale feeds upon euphausids and macroplankton and is reported to live upto about 80 years. It attains sexual maturity by about 21-23 m length and breeds once in 2 years. Gestation period lasts for about seven months, the newly born is about 6-7 m long and lactation period is about seven months. Including the first positive identification of the stranding in 1912, there are 14 such reports of this species till date, in conditions of washed ashore, entangled in gill nets, dead, decomposed or live and struggling in shallow waters. The strandings were usually during December-May and August-October periods, ranging in length from 6.3 to 20.3 m. Females have outnumbered males. The so-called Indian fin whale, *B. indica* is said to be a synonym of *B. musculus*; and till date eight decomposing carcasses are reported, mostly from the west coast and ranging in length from 12.1 to 23.7 m.

(5) Sei whale, *Balaenoptera borealis* Lesson

Males of this species grow to 16.8 m and females to 19.2 m. They attain sexual maturity at about 13.5 m length, with a 2-year breeding cycle. Gestation period is 12 months, only a single calf is born, the neonate is about 3.6 m long and lactation lasts for about six months. The first of the total 10 strandings so far was reported in 1971, with a peak in January. The rate of stranding was higher in Mandapam-Tuticorin area than in other localities. They ranged in length from 7.5 to 15.5 m and in a few cases they were found struggling for life in shallow coastal areas.

(6) Fin whale, *Balaenoptera physalus* Linnaeus

The average length of males of this species is about 20.1 m and that of the females is about 21.9 m, the former attaining sexual maturity at about 18.9 m and the latter at about 19.5 m. The life span is around 40 years. Gestation period is about 11 months, length of the neonate is about 5 m, its weight less than 2 t and the weaning period is about 6 months. A total of 8 animals were stranded during 1965-1993, spread over January to October. Except in one case of capture by a trawl net

from a depth of 40 m off Madras, all the others were strandings of dead animals, ranging from 4.7 to 15.1 m in length.

(7) Humpback whale, *Megaptera novaeangliae* Browski

This species reaches a maximum of 18 m length and 65 t weight and attains sexual maturity at about 11-12 m (4-5 years). It breeds once in two years, a single calf of 4-5 m length is born after about 11-12 months of gestation and it is suckled for about 5 months. There are only four recorded instances of its stranding in India, along the south-west coast during 1943-1993 either entangled in nets or washed ashore and ranging in length from 13 to 15 m.

(8) Bryde's whale *Balaenoptera edeni* Anderson

It usually froms shoals of 10-100 numbers and females of this species attains sexual maturity by about 12 m and 10 years old, with a gestation period of 12 months. The newly born is about 3.4 m long. It is a rare migrant to the coastal waters of India and only on three occasions during 1979-1993 its strandings have been reported, from Beypore, Tuticorin and Dhanushkodi, ranging in length from 12 to 13.5 m.

(9) Minke whale, *Balaenoptera acutorostrata* Lacepede

It appears singly or in groups of 2 to 3, becomes sexually mature at about 6-8 years old and males measuring about 7.3 and females about 7.9 m long. In India there has been only a single report of its stranding in 1961 at Punnamadakayal, measuring 9 m.

(10) Australian whale, *Balaena australis* (= *glacialis* Muller)

A single report of its stranding in India measuring 21.4 m long is available from Gujarat in 1944.

(B) DOLPHINS AND PORPOISES :

Most dolphins have a spindle - shaped body, a front beak and they range in length from 1.5 to 4.5 m; while in porpoises a distinct beak is absent. They feed mostly on small pelagic fishes and squids and give birth to a single infant, with a gestation period of 10-12 months. The dolphins charm millions of people in dolphinaria and oceanaria where

they swim and leap in unisom with agility, grace and intelligence. They establish a friendly relationship and full trust with their trainers and can produce ultrasonic sound. Their courting is performed with great charm, the male singling out a female and following her around for many days. The youngones are born with all their senses fully operative and lactation lasts for about six months.

Although dolphins get caught in fishing gears, the specific identities of various species are not reported adequately. At Cochin, the landings amounted to 1.4 t in 1981 and 2.4 t in 1992, while at Quilon it was about 2.2 t during 1982-87, mostly during April-October period.

(11) Bottlenosed dolphin *Tursiops truncatus* Ehrenberg

This is the more common and popular dolphin, easy to obtain, bears captivity, gets used to man, extremely winning in habits and grows to about 4 m long. Age at maturity is about 5 to 12 years in females (2.2 - 2.4 m) and 10 to 12 years in males (2.5 - 2.6 m) and gestation period is about 12 months. It is reported from all along the Indian coasts, getting entangled in gill nets and trawl nets forming 14% of the total dolphin landings.

(12) Spinner dolphin, *Stenella longirostris* Gray

It is found in herds of many hundreds and attain a length of 2.5 m from about 0.8 m at birth and is an indicator species for tuna. In oceanaria it is successfully maintained for several years. Females usually give birth to a single calf. This species is commonly caught (44% of dolpin catches) in the shallow coastal waters, especially between Bombay and Cochin, with more frequency during August-November period.

(13) Saddleback dolphin, *Delphinus delphis* Linnaeus

Growing to about 2.5 m length, sexual maturity is reached at about four years, gestation period is about 11 months and the neonate is about 0.8 m long. This species is also found to aggregate with tuna shoals; and it can be trained and kept in oceanaria. Forming about 37% of dolphin catches, it is generally entangled in synthetic drift gill nets set for large pelagic fishes with a mesh of 7-14 cm, especially in the Calicut-Vizhinjam zone of Kerala coast.

(14) Humpback dolphin, *Sousa chinensis* (Osbeck)

Characterised by a hump on its back, this species grows to a length of 3.2 m and is kept in oceanaria. About 5% of dolphin catches in India is of this species mostly from Mangalore-Calicut area, in the length range of 1.5 - 2.8 m.

(15) Killer whale, *Orcinus orca* Linnaeus

It attains a length of 9 m and feeds on fishes, cephalopods, birds, turtles and mammals. Males mature at about 6.7 m and females at 5 m length. Length at birth is around 2.5 m, fully grown male is about double the size of females, they travel in groups and exhibit a high degree of group-hunting cooperation. It can be easily trained in captivity and grown in oceanaria. In India there is only one reported instance of its stranding in Gujarat in 1941 and measuring 7.1 m long.

(16) False killer whale, *Pseudorca crassidens* Owen

It attains a length of about 5.5 m, feeds mostly on fishes and cephalopods, attains maturity at about 4.3 - 4.5 m and its breeding season is fairy extensive. Sixteen instances of strandings or entangling of this species are reported from different parts of the coast since 1942, ranging in length from 2.8 to 5 m.

(17) Pilot whale, *Globicephalus macrorhynchus* Gray

It attains a length of 5.3 m and feeds mostly on fishes. Female attains maturity at about 3.2 m and male at 3.8 m. Breeding and calving seasons are extended and the newly born measures 1.4 m long. There are reports of two mass strandings, one in Calcutta (1952) and another in Tuticorin (1973) (Alagarswami *et al.*, 1973), numbering a few dozens to 147 and in the length range of 2.2 to 5.7 m. Two females of 1.4 and 3 m length were caught in a gill net off Cuddalore in 1986.

Besides, there are about 37 reports of unidentified strandings of whales and dolphins until 1962 from various parts of Indian coast, based on decomposing carcasses and skeletons, more than 60% from west coast. Their length ranged from 3.6 to 31.8 m.

(C) DUGONG :

(18) Mermaid, *Dugong dugon* Muller

This marine mammal, popularly called "Sea Cow" and "Mermaid", is a sluggish animal responsible for several folk-lore in various countries. It reaches in length from 3 to 5 m and weight of more than 470 kg and feeds on sea weeds and sea grasses in shallow coastal waters. The size at maturity is about 2.3 m in females and the length at birth is about 0.9 m. The meat of dugong is a delicacy and its skin and oil are economically important. It can be easily acclimatised and is kept in oceanaria. In India it is reported from the Gulf of Kutch, Malabar coast, Gulf of Manar, Palk Bay, Madras and Orissa coast; but is relatively more common in the Gulf of Manar and Palk Bay, where a fishery was in existence (Nair *et al.*, 1975).

It is usually caught by gill nets, trawl nets, drift nets, ray nets, shore seines and by using explosives, mostly during April-July period. In the Gulf of Mannar - Palk Bay area about 25 numbers per year were caught during 1960-80; there was an increase in its exploitation subsequently to more than 200 per year during 1983-84; and a marked decline to a meagre 9 per year during 1986-88. The sizes of the dugong available for study have ranged from 0.9 to 2.8 m. Due to its docile nature, large size, friendly behaviour, economic value and due to human ignorance and indifference, the dugong has been indiscriminately hunted and the population is destroyed. Since the seaweed and seagrass beds are its feeding habitat, the recent exploitation of seaweeds in this area as well as the associated human interference have led to a degradation of this unique habitat and forced the dugongs to seek such habitats elsewhere. The depletion in the dugong population is so much serious that it has been declared as an endangered animal (the most endangered one of the marine environment) and is protected under the Indian Wild Life Act 1972. Although its fishery has been legally banned, there have been clandestine attempts at its capture especially along the south-east coast of India.

PROTECTION AND CONSERVATION

All the marine mammals of the world are vulnerable to the increasing human exploitation and have become endangered. Hence

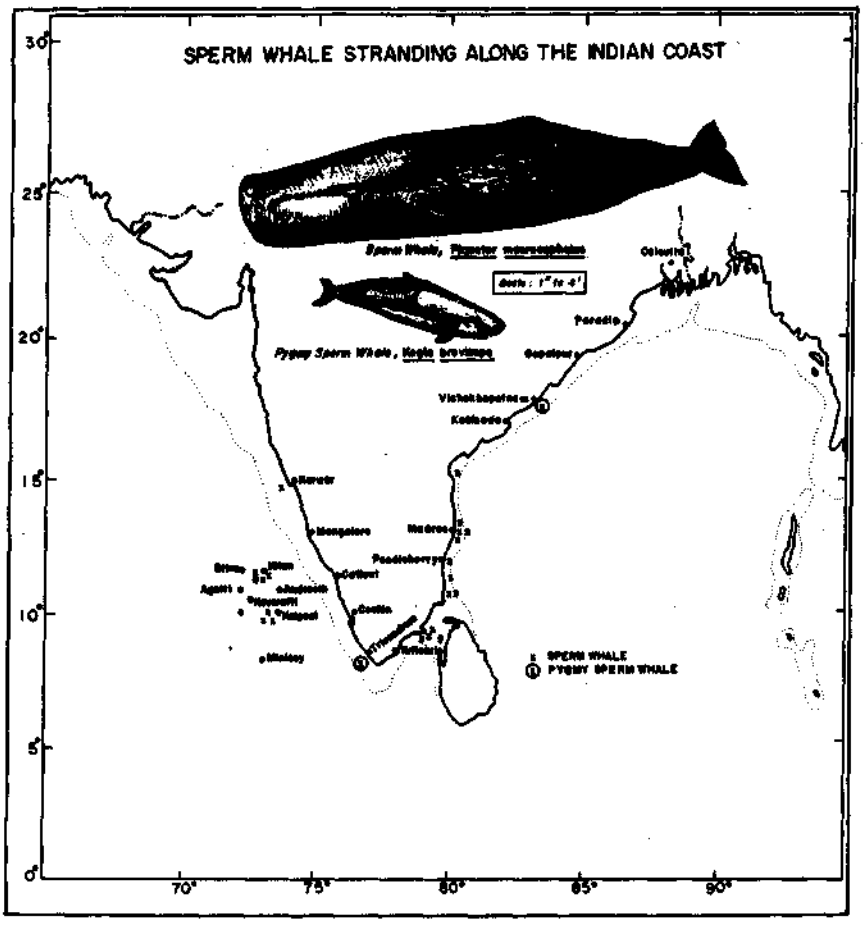
there is an increasing awareness among international bodies such as International Whaling Commission (IWC), United Nations Environmental Programme (UNEP), United Nations Conference on the Law of the Sea (UNCLOS) and International Union for Conservation of Nature (IUCN) to focus much more attention on their protection, conservation and judicious management. In order to fulfil the international objective of protection, conservation and management of marine mammals, detailed investigations on aspects such as their habits, habitats, distribution, abundance, migrations and biology are imperative. Apart from what has been documented so far, the actual numbers of dolphins and dugongs which are caught, accidentally or illegally, must be far higher than reported. Hence, in order to formulate suitable management procedures for the protection and conservation of these animals, a strong and accurate data base on such killings is a basic and vital need.

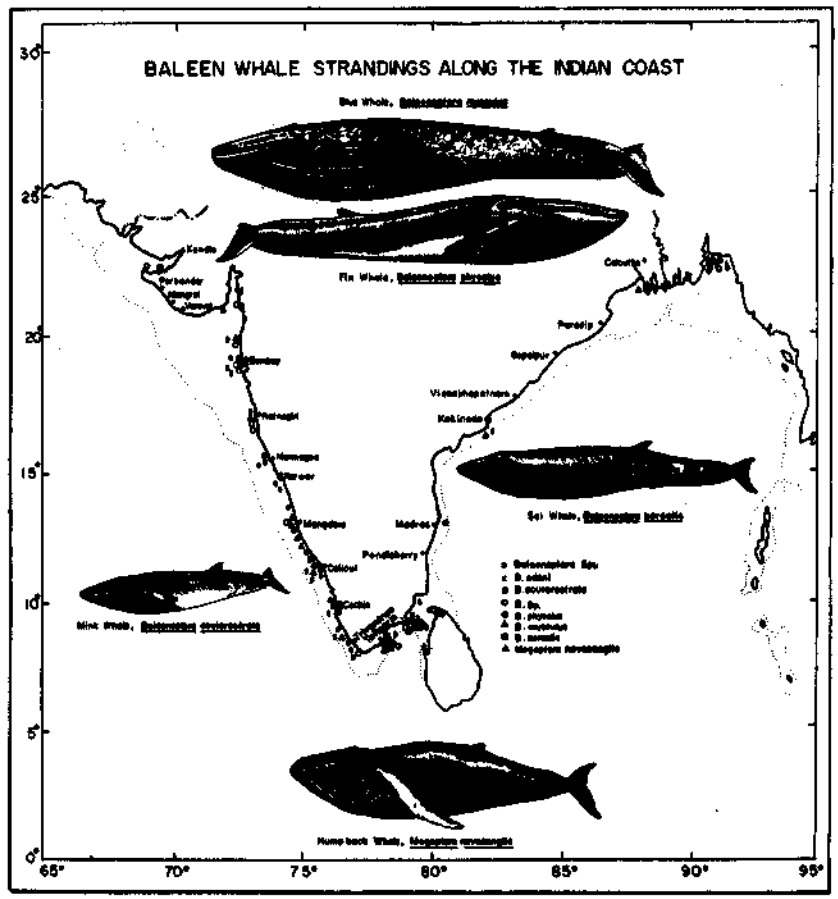
In a developing country such as India where economic considerations of the common man mask and overrule his enviromental thinking and rationale as at present, any attempt at protection of these vulnerable resources is possible only through a cooperative spirit and voluntary involvement at protection and conservation, rather than by enforcing legislation. Since marine mammals have wide distribution and wide breeding and feeding migrations conservation efforts should have an international approach among all the countries boardering the Indian Ocean, whose responsibilities have become much more in the light of the declaration of Indian Ocean as a sanctuary for marine mammals by IWC in 1979. The destruction of dugong habitats in the Gulf of Mannar-Palk Bay zone between India and Srilanka is a classical example in this regard. It is needless to stress that any conservation measure should also take into account the protection of the habitats of these endangered animals, for which bilateral/multilateral agreements and cooperation are needed among the concerned maritime countries (Silas, 1988).

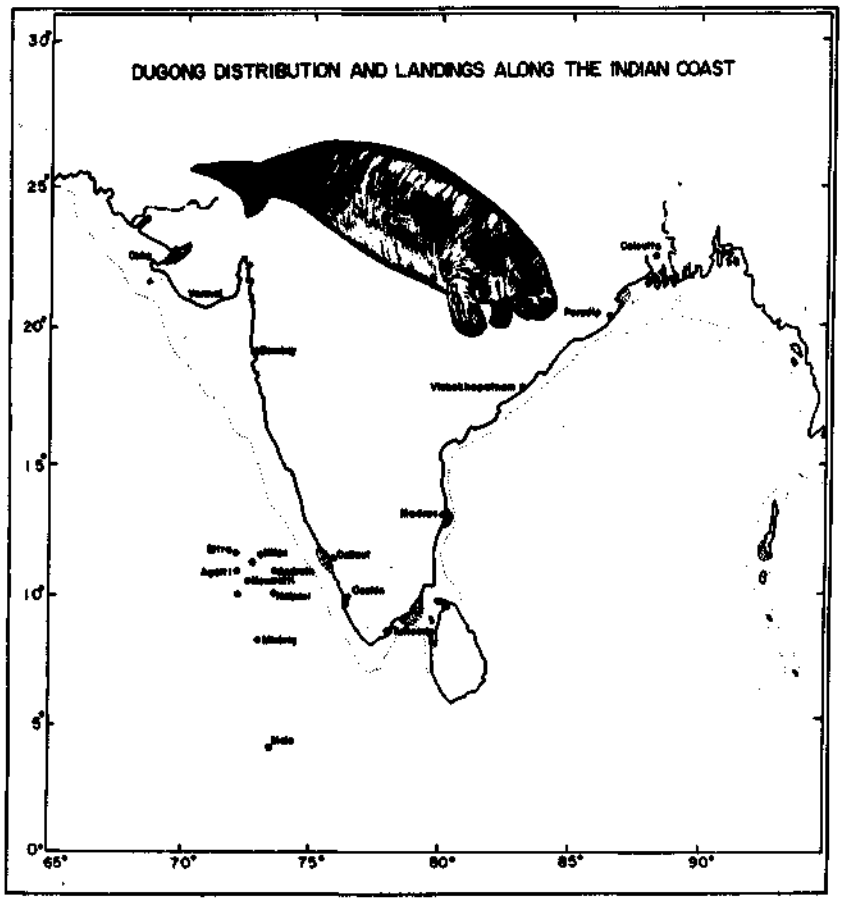
The major threats to the well-being and survival of marine mammals are the following : (1) degradation of feeding grounds due to human interference and discharge of pollutants, (2) competition for food (3) low birth rate (4) predation of their calves by animals such as

sharks, (5) their capture/entanglement by industrial fishing gears such as gill nets, trawl nets and purse seines and (6) directed hunting, opportunistic netting/harpooning/usage of dynamite for illegal capture.

Some of the suggestions given for preventing the above are : (1) banning the capture of these animals, both intentionally and unintentionally, (2) replacing destructive gears such as set gill nets by harmless gear such as long lines in areas which are vulnerable, (3) popularising the usage of acoustically opaque gill nets in localities where these mammals feed and/or breed, (4) establishing marine parks and sanctuaries in regions which are frequented by these animals with the aim of protecting the resources, (5) curtailing irrational fishing exploitation in their natural habitats, (6) accurate reporting of all the landings and strandings along with relevant details on the identity and vital biological data to research organisations, (7) strengthening research on the behaviour and biology of marine mammals and extension activities on their protection and conservation, promoting awareness, sympathy and interest for these animals among the coastal people, especially those who are active fishermen, (8) formulation of bilateral/multilateral cooperation among the concerned countries for their conservation as well as provision of adequate funds for the same, (9) making the existing legislations much more severe against illegal capture and more resilient in order to accommodate the changing requirements for conservation and management upto the E E Z, (10) giving due importance to marine mammals while undertaking resources surveys in the E E Z, (11) all the catalogued species of marine mammals from India may be brought under CITES regulations and (12) setting up of a "National Marine Environment Protection and Resources Conservation Authority", with wide and constructive legislative powers to protect, conserve and audit the marine ecosystems and their resources, by taking into confidence all concerned. It is hoped that with such concented efforts it will be possible to protect and conserve the marine mammalian diversity in the Indian seas.


SPERM WHALE STRANDING ALONG THE INDIAN COAST
30°
25°
20°
15°
10°
5°
0°
70°
75°
80°
85°
90°
Sperm Whale, Physeter macrocephalus
Pygmy Sperm Whale, Kogia breviceps
Paradip
Visakhapatnam
Kozhikode
Mangalore
Pondicherry
Cuddalore
Tuticorin
Minicoy
SPERM WHALE
PYGMY SPERM WHALE


BALEEN WHALE STRANDINGS ALONG THE INDIAN COAST
30°
25°
20°
15°
10°
5°
0°
65°
70°
75°
80°
85°
90°
95°


DUGONG DISTRIBUTION AND LANDINGS ALONG THE INDIAN COAST
30°
25°
20°
15°
10°
5°
0°
65°
70°
75°
80°
85°
90°