

MARINE WORLD

Act betimes to stop fast depletion

THE Wildlife (Protection) Act, 1972 is the most recent and important step taken in India to save nature and ecology. For the protection of environment and its management including the marine ecosystem, the Department of Environment has been established. Other organisations like the Indian Board of Wildlife, Bombay Natural History Society and World Wildlife Fund—India, are also actively associated with conservation and management of endangered species. No developing nation spends as much as India on the conservation of her wildlife. However, a more aggressive role by India is called for in the context of continued exploitation and threat posed to the diminishing natural resources.

While there are a number of marine species (smaller cetaceans, dugong, white bellied sea eagle, estuarine crocodile, marine turtles, coconut or robber crab and the corals) that need delicate handling, three of them call for immediate attention.

The *dugong* or mermaid of legendary fame. The animal is considered to be on the verge of extinction. Uncontrolled exploitation has seriously depleted its population throughout its wide range of distribution along the tropical and sub-tropical coasts of the Indian and western Pacific Oceans. The Gulf of Mannar, at India's own backyard, is perhaps a major habitat of the dugong. Here itself, the docile and harmless animal is reported to be fast depleting in numbers due partly to greed and partly to ignorance. Dugong meat is highly priced in the villages adjacent to the Palk Bay and Gulf of Mannar. Disturbance in the coastal areas due to intense mechanised fishing, exploitation of the coral reefs which support and protect the browsing areas and ruthless hacking of the timid animal for meat sounded the death knell for the dugong.

Although catching the animal is an offence under the Indian Wildlife Protection Act, poaching continues unchecked. 'Project Dugong' on the lines of the 'Project Tiger' should be launched if the animal has to be preserved for posterity. The kills are on the rise, the methods used being brutal. The animal moves *en masse* from one grazing area to another. At present, the principal areas where dugongs are seen are free from intensive small boat traffic and from the types of commercial net fishing which pose major threats to this species in certain parts of the world.

For the immediate protection and conservation of the dugongs in the Palk Bay and the Gulf of Mannar, the following steps are suggested:

The distribution, current numbers, habitat preference and migration routes have to be studied based on which measures for conservation could be undertaken.

Public awareness should be created re-

garding the importance of conserving the dugong and its vulnerability to fishing.

The present methods of capture of dugong should be studied in detail for streamlining the regulatory measures in fishing.

The existing laws prohibiting the capture of the dugong should be reviewed and up-dated.

Co-operative action between India and Sri Lanka is urgently needed for the protection and conservation of the dugong.

Sanctuaries should be declared in the areas of the Gulf of Mannar and Palk Bay. The proposed National Marine Park in the Gulf of Mannar from the Indian side and similar proposals from Sri Lanka should be implemented.

Monitoring of the free stocks of dugong should be done on a continuous basis to estimate the numbers and study the effect of regulatory measures.

Captive breeding stocks should be maintained in India and Sri Lanka.

The second most important and endangered marine community are the *corals and coral reefs*. This ecosystem is composed of an incredible variety of life—sea-anemones, sea-cucumbers, sea-urchins, giant clams and beautifully coloured fishes dancing in and out of the coral forest—a veritable underwater garden. Also they contribute to the enormous biological wealth in the form of sea food and other industrial products. This in itself is an adequate reason to avoid uncontrolled exploitation. The death of corals on a large scale has occurred in several countries like Japan, Indonesia, Florida, Colombo, French Polynesia, Tokelau Islands, Reunion, Arabian Gulf and the Galapagos. The reasons for mortality are several—the El Nino sea water warming effect (corals are killed by an increase of sea water temperature of as little as 2°C), bleaching of corals (loss of zooxanthellae from coral tissues), accelerated land clearance, erosion and increased sediment in water, high levels of herbicides and runoff of freshwater due to excessive rain.

Human interference is the most disconcerting activity that poses permanent threat to the life of corals. Calcareous secretions of corals have grown over several thousands of years. Sand formed from such corals due to weathering is rich in calcium carbonate and is white in colour. Exploitation of corals and coral reefs for industrial uses has gone unabated until restrictions were imposed in India recently. Dredging and blasting of reefs takes a great toll of the live corals. Conversion of corals into coral sand and accumulation of silt is a single major deleterious condition that kills the species. Besides light, the other important requirement for corals to grow is clear unsilted water. For this reason, they do not form along very shallow coastline. Destruction of corals is also the death of a vast community of animals and plants that live in close association with corals.

contribute to the formation of coral islands and hence are directly responsible for the existence of the islands. Corals still grow and contribute to the expansion of the islands. Formation of land is an important function of corals. Having created the land, they are essential to conserve it. They reduce wave action by creating a breaker zone.

Corals are not easily replenished. They grow at a rate of 2-3 cm a year. Dredging for navigation causes large scale stirring of bottom. Disturbance even at 1 metre depth affects corals. Dredging of the lagoon in Lakshadweep resulted in large scale destruction of live and dead corals which in turn affected the bait fish populations on which the pole and line fishery for tuna, a most important economic activity of the islands, depends.

It has been estimated that 2,000 million tonnes of calcareous sand and boulders are available in the lagoons of Lakshadweep and about 700 million tonnes of it can be safely extracted for industrial use. There is a proposal to set up a 20-tonne a day white cement manufacturing plant. Large scale removal of calcareous sand and boulders from the coral reef will result in serious erosion problems. The lagoons also contain some seaweeds of high pharmaceutical value. The potential yield of fish is estimated at about four lakh tonnes, the present catch amounting to just one per cent. These and other resources are interlinked with the ecosystem and thus highlights the extremely fragile nature of the environmental structure. Exhaustive studies on the ecological and environmental aspects of large scale exploitation of natural resources in Lakshadweep are still needed before any large scale development activities are contemplated.

The prospects of conservation of the marine and estuarine turtles are somewhat brighter. All the five species of sea turtles in India are protected. Even so, there is no debating that the future of the sea turtle populations is insecure.

During breeding season, hundreds of living turtles are carried away for marketing, through crude methods of transportation. Turtles are transported during nesting season from Andhra and Orissa coasts to Calcutta market where there is good demand for the meat. Hundreds of dead turtles are washed ashore, evidently killed during fishing operations. Commercial slaughter of adult turtles not far away from the coast, probably at the time of copulation goes on unabated.

The Central Marine Fisheries Research Institute, Cochin has been engaged in a study on marine fisheries resources, their exploitation, conservation and management. It has already suggested the establishment of a National Marine Park in the Gulf of Mannar for the preservation of the flora and fauna and the habitat itself, which if implemented, would provide economic returns, which shelter the dugong, turtles and smaller cetaceans, protect the environment from further deterioration and provide marine recreation facilities. Similar marine reserves may be necessary elsewhere in the country. The Institute recently proposed to the Department of Environment two research projects on "conservation of coral reef ecosystem" and that "Project Dugong".

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