Oceanography 2018: Marine biodiversity in India with special reference to conservation, status, and issues - Sainudeen Sahib - SN College

Abstract

India has a vast coastline of 8000 km, of which, 5,423 km belong to Peninsular India and 2,094 km to the Andaman, Nicobar, and Lakshadweep Islands, and with an EEZ of 2.02 million sq.km. There are around 13,000 verified marine species in India. Indian coastal zones have a variety of habitats like Mangrove, estuarine, coral reefs, seagrass beds, lagoons, sand dunes, rocky shore, cliffs, intertidal mudflats, etc. The coastline of India has also supported nearly 250 million people and therefore the ecological services of marine and coastal ecosystems of India play an important role in India???s economic growth. The marine floral diversity includes 844 types of marine alga (seaweeds) belonging to 217 genera, 14 species of seagrasses and 69 species of Mangroves. The marine faunal diversity includes a good sort of life forum. The Indian coastal water harbours 451 species of sponges, quite 200 species of corals, quite 2900 species of crustacean, 3370 species of marine molluscs, quite 200 species of bryozoans, 765 species of echinoderm, 47 species of tunicates, quite 1300 marine fishes, 26 species of sea snakes, 5 species of sea turtles and 30 species of marine mammals including dugong, dolphins, whales etc. In addition, a wide variety of seabirds can be observed around the coast. There are ten species of sharks and rays including whale shark, all species of seahorses, all cetaceans, dugong, nine species of shells, five species of sea turtles, one species of otter, all types of corals, all species of sponges and every one holothurians that happen in coastal and marine areas of India are measured under danger, therefore, protected under the Wildlife (Protection) Act, 1972 by listing them in the Schedule. Major anthropogenic direct drivers of ecosystem degradation and destruction include habitat conversion to other forms of land use, overexploitation of species and associated destructive harvesting practices, the spread of invasive alien species, and therefore the impacts of pollution from agricultural, domestic and industrial effluents. In this paper, the major issues related to coastal and marine biodiversity conservation and measures taken to address them have been highlighted.

The importance of marine biodiversity is often visualized from the very fact that the ocean waters cover about 71% of the surface and account for 99% of volume that's known to sustain life. The diverse marine and coastal habitats harbour a wide range of biodiversity. The total number of recorded marine species (both plants and animals) is a smaller amount than that of terrestrial habitats. It is because of the fact that marine diversity has not been fully understood due to logistic constraints in explorations and collection of specimens. However, it is also a fact that marine animals are more diverse than land animals at higher phyletic level. All phyla except one are found to occur in the sea. On the other hand, only about half of the total number of phyla is represented by land animals. The range of body forms and structure of marine animals are more than that of land animals. Similarly, marine flowers forms also show greater survival strategy. Marine diversity is mostly studied in waters along the coast and around the islands. Coastal zone represents

18% of the Earth surface providing space to about 60% of the human population. It is very important bio-geochemically as it buries and mineralizes 89 to 90% of organic matter and acts as a sink for an estimated 50% of the global carbonate deposition. It has a high biological potential as it provides feeding, nursery and spawning grounds to a rich variety of marine life forms. Diversity within the species complex, typical of tropical waters and co-existence of various fish and shellfish species within the same ground are important features of Indian Marine Biodiversity.

Previous studies on the biological and fishery characteristics of the significant collections shown that the majority of the species supporting the fishery are short lived with a mean lifetime up to 3-5 years, but the fishery existence mainly supported by under a year old and one year old. They are highly productive and spawn over longer periods generally with fractional spawning and show wide annual variation in recommitment. Several issues in the captive fisheries sector adversely affect the marine biodiversity of the country especially within the fish as ecosystem good to citizenry. The issues like limitations of growth and production within the inshore fishing grounds, less profitability and economic returns thanks to increased cost of fishing operations, management problems in the background of mutual property multigear, multispecies nature of fisheries. The above issues brought about by the uncontrolled fishing effort put into the fishery without any regard to stock-production-recruitment relationship. Also these are the ecological problem created by increasing pollution of coastal waters by release of raw effluents and pollutants by agro industrial complexes operating within the coastal zone. It has been observed that the sediment in certain waters contains high levels of Copper, Zinc and Lead. The mercury content in a number of the marine organisms at certain places has been found to be above the traditional which can alter the genetic makeup of species. The fly ash deposits from thermal plants at certain places are on the rise and it changes rock bottom topography of the affected area and chances of species depletion and replacement. To address these issues a radical knowledge about different marine ecosystems like mangrove ecosystems, reef ecosystem, estuarine ecosystem, coastal marine ecosystem, lagoon, systems, coastal ecosystems and marine protected areas of India is prerequisite.

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