Environmental issues on coral reefs - an review

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Abstract

The basic aim of this document is to investigate the environmental issues and careless behavior of tourists. The coral reefs are found below water body ecosystems which are found by particles of colonies of coral polyps bound together by calcium carbonate. Majority of the reefs develop in warm, clear, and clean water bodies. The coral reefs provide services to tourism, fisheries and coastline and produce drugs for medical treatments. This paper focuses on protection of coral reefs to safeguard the environment and reduction of threat caused by human and natural disasters.

Key words: Climate change, Coral reefs, Ecosystem awareness, environmental concern, Sedimentation, Tourism.

INTRODUCTION

The paper focuses on steps to protect corals from destruction and how to safeguard their ecosystem for present and future generation. The total area of coral reefs in India is estimated to be 2,379 sq.km (D.O.D & S.A.C, 1997) which is less than 1% of all the coral reefs in the world. The coral reefs play a key role in protecting coastline from erosion. Every year the growth rate of massive corals increases up to 0.2 to 3 centimeters and branching corals growth ranges up to 8 to 10 centimeters every year. Coral reef support jobs and business through tourism and recreational acts. They are used in jewelers and as curios. The internal skeleton polished with colors is used in jewelry. Sea grasses that provide food for dugongs and dolphins are harbored by coral reefs. Coral blocks are used for buildings and road construction. Coral Reef Alliance say 25% of the marine life depends on coral reefs and more than millions of people depend on coral reef for their livelihood support such as income, food,

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and coastline protection, they employ and engage large community to safeguard coral reefs.

Types of Coral reefs

Coral reefs are categorized into three types, namely

Fringing reef are those reef that can see lying close to seashore areas. It can grow up to hundreds of yards from shoreline.



Barrier reefs appear parallel to a shore which are separated away from other water bodies.



Atoll is a ring-shaped coral reef which has coral rim that encircles a lagoon, located in warm tropical or subtropical oceans.



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ISSUES AND THREATS

Coral Reefs faces threats from anthropogenic activities and natural disasters. Coral Reefs Ecology and Biodiversity stated 75% of the world's coral reefs are currently threatened, 90% of coral reefs will be threatened by 2030 and 100% of reefs will be threatened by 2050, if we don't act now.

Anthropogenic Threats

Coral reef is destroyed because of over fishery, coral mining and as medicine to treat cancer, arthritis and viruses which leads to natural calamities. Many tourist behaviors cause destruction by scuba dives, littering and waste disposal, pollution from hotels, boats and resorts extended across different areas. Touching of coral reefs unknowingly by tourist leads to stress for corals and they die.

Key role of parrot fish: Ninety percent of the parrot fish devote their day by eating up algae which are present on coral reefs. Due to these activities it helps in cleaning the reefs and keep them healthy. They have the ability of changing the structure of reefs by storing the coral tissues.

Sedimentation:The major cause of sedimentation is due to human activities. it is caused due to accumulation of dirt and sediment particles. corals don't have the ability to move as a result they cannot remove the wastes presentover them.



Natural Threats

Climatic changes: Changes in weather conditions leads to warming of water and rise in ocean temperature and causes stress that contributes to coral bleaching and loses its algae. Large number of sediments on the corals can cause death due to smothering. Coral reefs respond toward pH level and the carbonates present in the sea water level also.





Fig. 1. Coastal map of India demonstrating the coral reef zones, protected areas and sites vunerable to bleaching



| Families | Gulf of Kutch | Lakshadweep | Palk Bay and Gulf of Mannar | Andaman & Nicobar | Total |
|----------|---------------|-------------|--------------------------------|----------------------|-------|
| Genera | 24 | 37 | 36 | 57 | 154 |
| Species | 52 | 172 | 117 | 177 | 518 |



Fig. 2. Current percentage of coral reefs in India

Storms and earthquakes: Huge and strong waves from cyclones and hurricanes may damage and destroy coral heads and can kill the entire colony. Earthquake can destroy the layers of coral reefs by moving huge families of corals, they have the pressure to move the below level of water bodies.

Ocean Acidification (OA): It is considered as one of the most dangerous threat to the ecosystems of coral families because it minimizes the requirement of carbonate ions which helps the reefs to build corals in the production of their own skeleton structure.

Figure 1 shows the major coral reef areas that are spread across four regions in India and they are as follows, Gulf of Kutch in Northwest (Gujarat), Lakshadweep (Union Territory), Gulf of Mannerand Palk Bay (Tamil Nadu) and Andaman and Nicobar Island (Union Territory). The total area covered in India is 5,790 Km2. The early works on the taxonomy of Scleractinia from the Indian waters are those of Alcock (1892), Gardiner (1903-06), Brook (1893) Bernard (1905), Mathai (1914, 1928) and Gravely (1927), wherein corals from the deep waters of India, Pillai (1972), Scheer and Pillai (1974) Pillai (1983), Pillai (1986) Pillai and Patel (1988), Pillai and Jasmine (1989) and Pillai and Jasmine (1966). Table 1 gives the current list of genera and species in various regions of India, which indicates that coral reel species growth has been increased widely.

Figure 2 shows the levels of coral reefs in India. We can see that Andaman and Nicobar island has the least recovery status comparing to other three areas in India.

Following policy suggestions are given for the protection and maintenance of coral reefs in India

o Create awareness programs to know the value of coral reefs for present and next generation.

o Framework can be made in Education policy to provide more knowledge about coral reefs.

o Establish project works to help government and local communities to measure the impact of threats occurring due to human and natural activities.

o Tourist behaviors can be analyzed and measured during water adventure tourism

o Sustainable management plans can be framed to protect coral reefs ecosystem in India.

CONCLUSION

All kind of coral reefs are protected under (CRZ)- The Costal Regulation Zone. The category and section 7(2) prohibits the building of bleach resorts or hotels near coral reefs surrounding. Our research suggests that tourism is restricted in some areas. However, it is necessary to continue and build the growth of the coral reefs because most of them are largely found in Indian Ocean. Our research further suggested corals are being protected by concerned organization and efforts are being taken to control infectious diseases spreading across coral reef regions. Overall, we can see a good growth of coral reefs in all the four regions of India.

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