

Ignorance of coral reef: Threat to environment

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Abstract

Coral reefs are the most diverse communities on the planet. These are one of the most ancient and dynamic ecosystems. The coral reefs not only provide a myriad of marine life but also play a key role in protecting the coastline from erosion. They play an essential role in sustaining life in the sea and serve as a source of food and protection for human communities. But coral reefs face an uncertain future. As a result of growing human and environmental assaults, reefs are among the most threatened ecosystems on earth. Ecological research provides information fundamental to understanding and combating this trend.

Keywords: coral reefs, Reef management and restoration

1. Introduction

Coral reefs are one of the Earth's most beautiful, ancient and complex ecosystems. The Indian coral reefs are world famous. They play an essential role in sustaining life in the sea and serve as a source of food and protection for human communities. Coral reefs are the most diverse communities on the planet. These tropical marine communities occupy less than 1% of the ocean floor, but are inhabited by at least 25% of all marine species.

There are 18 families reported from the world, of which 15 are represented in India. This diversity is almost the same when compared biogeographically to all reefs in the world. However, of the 111 genera reported from the world, India has only 60, which is slightly less when compared to Indo-Pacific centre of diversity i.e., 82 genera. Of the 793 species of reef forming shallow water corals reported from the world, India has 208+ species. It is expected to increase up to 400 when intensive studies are carried out, which is far less when compared to 581 species reported from the neighbouring Indo-Pacific centre of diversity.

Andaman and Nicobar, Lakshadweep, Gulf of Mannar (Tamil Nadu), Gulf of Kutch (Gujrat) are well known for their coral reefs, each are being unique and distinct in their diversity. Coral reefs are one of the oldest complex ecosystems on Earth. Similar marine communities have existed for hundreds of thousands of years. Most of the reefs we see now have been growing for over 5,000 years. Coral reefs are found within the jurisdiction of more than 100 countries and occupy more than 600,000 square kilometers of tropical oceans. They generally require clear, warm water and high light intensity for survival. This limits them to shallow water, with maximum diversity occurring between 10 to 30 meters below the surface. Reefs exist in nutrient-poor environments and for that reason small changes in the nutrient content of the water can adversely affect their survival. In addition to their high diversity, coral reefs are very productive marine communities. They play a critical role as habitat and nursery grounds for 10 to 20% of the world's fisheries. They are intimately connected to other

marine communities such as mangrove forests, sea grass beds, and the open seas as water currents transport larvae, plants, animals, nutrients, and organic materials. Coral reefs play a significant role in the development of other ecosystems such as mangroves and wetlands and protect coastlines from wave and storm damage and erosion. Life-saving medicines, such as anticoagulants, and anticancer agents such as prostaglandins come from coral reefs.

The rocky framework of coral reefs is formed from the calcium carbonate deposited mainly by calcareous algae and the stony corals, most of which are colonial animals resembling tiny, interconnected sea anemones. Reef-building corals contain symbiotic algae in their tissues, enabling them to develop the large, massive, branching, or encrusting carbonate skeletons that provide habitat and food resources for support of other reef organisms, such as fish, lobsters, giant clams, and sea urchins to name but a few. Reefs maintain a network of intimate ecological relationships and delicate food webs. Disruption of coral reef communities can break up these ecological bonds. "Globally, best estimates suggest that about 10% of coral reefs are already degraded, many beyond recovery, and another 20% are likely to decline further within the next 20 years. At least two-thirds of the world's coral reefs may collapse ecologically within the lifetime of our grandchildren, unless we implement effective management of these ecosystems as an urgent priority."

2. Ecology of Coral Reef

Causes of reef degradation have studied. Loss of large predatory fish and other key components of the ecosystem have caused disruptions of reef food webs. These disruptions have led to the loss of coral and increases in algae.

Diseases are found that can kill coral.

Alternatives to destructive fishing practices can be obtained through information collected on the life and breeding cycles of threatened reef species such as groupers can lead to reduced stress through commercial breeding.

Reef management and restoration, are ongoing processes

Corals around the world have been adversely affected by sedimentation, bleaching and diseases such as cyanobacterial infections. These affect growth, reproduction, productivity and survival of coral. Recent studies indicate that both the variety and extent of coral diseases are increasing dramatically.

Coral reefs are vital to fisheries. Coral reefs are often considered the medicine cabinets. They offer great promise for pharmaceuticals now being developed as possible cures for cancer, arthritis, human bacterial infections, viruses and other diseases. Coral reefs also buffer adjacent shorelines from wave action, helping to prevent loss of life, property damage and erosion. Globally, about 20 countries have few resources other than coral reefs. In developing countries, they contribute about 25 percent of the food catch, providing food to one billion people in Asia alone.

3. Loss of Coral Reef

Human activities are causes the loss of coral reefs, including: Over-fishing, destructive fishing practices use of cyanide and dynamite to capture fish.

Pollution, due to increased sedimentation smothers the coral tissue and nutrients that suffocates the corals.

Physical damage from tourists damaging the reefs and ships colliding with reefs.

Alteration of coastline / Island habitats, such as deforestation, coastal development.

Use of coral for food, medicine, and aquaria and other use are increasing loss. These bring high prices and have resulted in destructive fishing that destroy the reefs, as well as their inhabitants.

4. Conclusion

Ecologically based management can provide important steps to restore reef ecosystems by addressing some of these threats. Water quality and fisheries management are necessary to restore reef ecosystems. Protected areas such as sanctuaries, reserves, and no-fishing zones permit destroyed ecosystems to recover.

5. References

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