Mains Practice Question

Q. What do you understand by coral bleaching? Examine the reasons for coral bleaching and suggest corrective measures in this regard. (250 words)

12 Apr, 2019   GS Paper 1 Geography

Approach

- Define coral bleaching in introduction.
- Describe reasons for Coral bleaching.
- Suggest corrective measures to deal with Coral bleaching.
- Give conclusion

Introduction

- Coral bleaching is losing of coloured pigments by corals that results from the loss of a coral's symbiotic algae (zooxanthellae) or the degradation of the algae's photosynthetic pigment.
- Coral bleaching is associated with the devastation of coral reefs, which are home to approximately 25 percent of all marine species

Reasons of Coral bleaching

- **Rising sea surface temperatures:** Mass coral bleaching generally happens when temperatures around coral reefs exceed 1 degree celsius above an area's historical norm for four or more weeks. Sea surface temperature increases have been strongly associated with El Niño weather patterns as well as global warming due to anthropogenic activities.
- **Rising sea levels:** Due to global warming there has been sea level rise and sedimentation resulting in sedimentation runoff which can lead to the smothering of coral.
- **Ocean Acidification:** There is ongoing decrease in the pH of oceans through uptake of anthropogenic CO_2 from the atmosphere. Although the natural absorption of CO_2 by the world's oceans helps mitigate the climatic effects of anthropogenic emissions of CO_2, it is believed that the resulting decrease in pH, (i.e. making the water acidic), will have negative consequences, primarily for oceanic calcifying organisms such as coral reefs.
- **Unsustainable tourism:** Hotels and resorts discharging untreated sewage and wastewater into the ocean, polluting the water and encouraging the growth of algae, which competes with corals for space on the reef.
- **Coastal development:** The growth of coastal cities and towns results in pollutants like nutrient-rich water causing fleshy algae and phytoplankton to thrive in coastal areas in suffocating amounts known as algal blooms. Coral reefs are biological assemblages adapted to waters with low nutrient content, and the addition of nutrients favors species that disrupt the balance of the reef communities.
- **Pollution:** Coral reefs need clean water to thrive. From litter to waste oil, pollution is damaging reefs worldwide. Pollution from human activities inland can damage coral reefs when transported by rivers into coastal waters.

Corrective Measures

- **Reducing global warming:** Paris climate agreement seeks to control global warming. The agreement should be effectively implemented by the countries.
- **Regulating Coastal Zones:** Need for management practices that reduce levels of anthropogenic disturbance e.g. regulating tourism, high nutrient pollution and overfishing
- **Enabling policy for coral reef management:** Creating an appropriate enabling environment, both in terms of the policy context and at the local level through a community-based approach, for effective coral reef management.
- **International Collaboration:** Agreements like Ramsar Convention, Convention on Biological Diversity , CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora etc need to be implemented in true spirit for coral reef conservation.

Conclusion

- Corals reefs are important for many different reasons aside from supposedly containing the most diverse ecosystems on the planet. They protect coastlines from the damaging effects of wave action and tropical storms provide habitats and shelter for many marine organisms ,are the source of nitrogen and other essential nutrients for marine food chains, assist in carbon and nitrogen fixing, help with nutrient recycling.
- Considering their importance to ecosystem as a whole their conservation needs to be prioritized through focused policies and engagement of civil society as well as private stakeholders.