The Endangered Great Barrier Reef

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Abstract

The Great Barrier Reef is stressed, as it is constantly facing threats to its health and to the balance of its ecosystem. This paper explores the various environmental and physical dangers to the health and resiliency of the Great Barrier Reef, as well as their impact on the Reef and its ecosystem.

Introduction

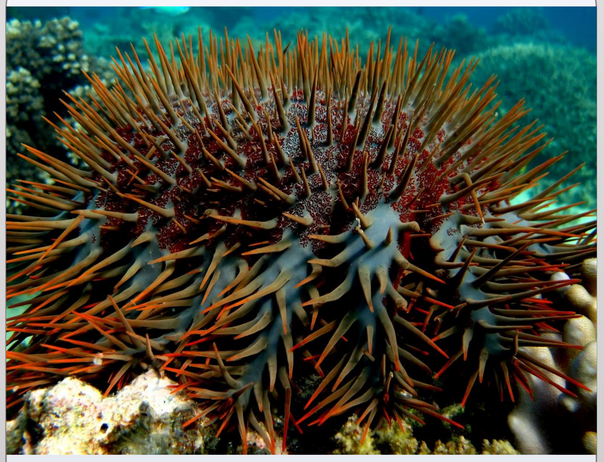
The Great Barrier Reef is the single largest biological organism on Earth. It is home to many diverse species of marine life, which help maintain a balanced ecosystem and preserve the health of the Reef. The biodiversity in the Reef's ecosystem is of the utmost importance because the Reef faces numerous environmental and physical threats to its health, including deteriorating water quality, crown-of-thorns starfish, overfishing, and human damage resulting from everyday activities.

Deteriorating water quality is detrimental to the long-term health and resiliency of the Great Barrier Reef. There are a number of water quality variables affecting the health of the Reef, the chief of which is pollution by nutrients and toxic chemicals. Agricultural runoff containing nutrients, sediments, and pesticides significantly impact water quality (Assessment). Eighty percent of the land adjacent to the Great Barrier Reef is farmland used for agricultural purposes. This poses a threat to the Reef because farmers regularly use fertilizers and pesticides. Fertilizers contain high amounts of nitrates and phosphorus, and pesticides include toxic metals such as lead, mercury, and arsenic (Michigan). As a result the runoff that occurs carries these toxic elements into the Reef's ecosystem. Sewage discharge is an additional means by which nutrients enter the Reef's ecosystem. According to *State of the Environment Queensland 2003*, in south-east Queensland nutrients released through wastewater discharges account for 40% of the total nitrogen and 60% of the total phosphorous released to coastal waters (189). The high level of nutrients in the water can lead to algal blooms, which exhaust nearly all the dissolved oxygen in the water, killing zooplankton, fish, and shellfish (Marine Pollution). Consequently, this causes a decline in the biodiversity of marine life in the Reef's ecosystem. Biodiversity typically aids in the breakdown of pollutants and in the maintenance of the Reef's ecosystem (Global Issues). And so, when the variation of marine life declines, the Reef's resilience is compromised.

(Water runoff, which loads nutrients and toxic chemicals into the Reef's ecosystem.)

The elevated level of nutrients likewise causes an increase in phytoplankton, the main food source for crown-of-thorns starfish. Crown-of-thorns starfish are a danger to the health of the Great Barrier Reef. At times, crown-of-thorns starfish play a vital role in preserving the health of the Reef. They feed on fast growing corals, which allows slow growing corals to form colonies. This increases coral diversity within the Reef's ecosystem. When there is a low number of crown-of-thorns starfish, the Reef can recover from any damage that it may sustain from their feeding. However, when there is an outbreak, the population increases to a point where the coral cannot recover from the damage, thus jeopardizing the Reef's health. Outbreaks occur when an increase in the level of nutrients in the water coincides with the spawning season of the crown-of-thorns starfish. This enables the larval crown-of-thorns starfish to grow and survive at much higher rates (Marine Park). This is damaging to the health of the Reef, as the myriad of crown-of-thorns starfish is inflicting damage to the corals at an alarming rate. What's more, the frequency of these outbreaks has increased from once every eighty years to about once every fifteen years. Heretofore, there have been three major outbreaks, which account for forty-two percent of coral damage on the Reef since the mid 1980s (Marine Park). The rising prevalence of the outbreaks is concerning as the Reef is already overtaxed by other threats to its health.

Though many of the threats the Reef faces are environmental in nature, others are physical hazards, usually stemming from human activity. One such threat is overfishing, which occurs when more fish are caught than the population can replace through reproduction. Overfishing stems primarily from lack of government regulations on fisheries, as current rules are not strong enough to limit the fishing capacity to a sustainable level (World Wildlife). Moreover, fisheries employ harmful fishing practices, which cause further damage to the Reef (Michigan). Enforcing more regulations on fisheries can help make fishing more sustainable, as well as help curb the use of destructive fishing techniques. This would inevitably mitigate the effects of overfishing on the Reef.



(Crown-of-thorns starfish.)

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(Overfishing, which depletes the population of certain species.)

The Great Barrier Reef is also susceptible to physical damage from other everyday human activities. The Reef is particularly vulnerable to anchor damage. When a vessel grounds near the Reef, the anchor drops or drags on the coral. Anchoring causes significant damage to the corals, and it can take years for the corals to recover. Though, some corals cannot return their original condition (Public Moorings). The damage caused by anchoring and other commonplace human activities exacerbates the damage the Reef has already incurred, and further hinders its ability to recover.

Conclusion

The Great Barrier Reef continually faces various environmental and physical threats to its health. While the biodiversity of marine the Reef's ecosystem helps the Reef recover from the damage it sustains, a protection plan must be enacted to preserve the Reef's health and limit the damage it incurs in the future

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