Coral Reef Bleaching Causes and Environmental Impact

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Introduction

There are around half a billion people in the world that rely on coral reefs for food. Unfortunately, coral reefs are being harmed and destroyed due to coral bleaching. Coral bleaching occurs when corals are under stress caused by changes in water temperature, light, and nutrient levels. These changes affect the relationship between the coral and the zooxanthellae algae that live in coral tissues causing the coral structure to turn white. Coral bleaching has affected 51% of all coral reefs globally but it doesn't stop there. When corals become bleached it affects the marine species that live near the reef as well as the humans that rely on the reefs for food and shoreline protection. Humans are the reason why corals are bleaching but they can be the answer to solving this problem. If humans can reduce runoff, recycle, and spread the word the coral reefs can be saved.

Objectives

We wanted to research the impacts and causes of coral bleaching using a literature review. Using government websites and peer reviewed articles with the key words coral beaching, causes, impacts, prevention.

What is Coral Bleaching?

- Coral bleaching is when corals lose their vibrant color and turn white
- The corals get stressed and expel the Zooxanthellae out of their tissues
- From 2014- 2017, 75% of coral reefs became bleached worldwide and around 30% of the coral bleaching caused mortality
- The coral is not dead, but it becomes at risk for starvation and disease

Figure 1. Healthy Coral (Left) vs. Bleached Coral (Right).

Causes of Coral Bleaching

- Rising Ocean temperatures caused by climate change
- Increased UV radiation and sun exposure
- Changes in water quality
- Changes in the water levels

Figure 2. Healthy coral with biodiversity.

Environmental Impact

- Coral bleaching causes the relationship between coral and zooxanthellae to decline
- Species like fish that depend on corals are affected by coral bleaching
- Coral bleaching causes a decline in genetic and species diversity
- Coral bleaching reduces the protection humans have from natural disasters
- Coral bleaching affects the amount of ecosystem services a reef can provide

Figure 3. Bleached coral that has lost its diversity.

Preventions Methods

- If you snorkel or dive near a coral reef, ensure not to touch the reef
- Refrain from anchoring near a reef
- Limit sunscreen use and use a long-sleeved rash guard or limit sun time during peak hours
- Limit fertilizer use to help prevent excessive runoff
- Find "green" transportation methods. These include using public transportation, buying an efficient car, walking, or riding a bike

Conclusion

Coral bleaching is a current issue that is affecting corals all over the world and the populations that rely on the corals. Coral bleaching has many causes and creates many environmental impacts. It is important to remember that bleached corals are not dead coral. There are ways to protect the reefs like avoid touching them, anchoring near them, limit sunscreen use, limit fertilizer use, and use "green" transportation methods when possible.

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