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Coral Bleaching

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Introduction

Coral Bleaching – When exposed to warmer temperatures, corals expel their algae (zooxanthellae), causing them to lose their energy and color.

Figure 1: Bleached Coral

Figure 2: Unbleached Coral

Coral bleaching events are becoming more frequent and more severe due to climate change.

So, what happens when coral bleaching occurs and how can coral reefs adapt?

Purpose/Aim

Increase awareness on climate change and the rising global average of sea surface temperatures.

Understand the relationship that thermal stress has on coral reef systems.

Determine how coral reefs systems can adapt to warmer ocean temperatures.

Results

Some coral can die immediately from extreme heat stress, other species die from repeated bleaching with not enough time to recover.

Bleaching Thresholds:

<3°C → almost no coral loss
4°C → steep decline by 40%
8°C → ⅔ of coral cover lost
9°C → coral could not recover

As heat increases, the composition of reefs change, and the resilient coral species begin to dominate.

Changes in Coral Cover

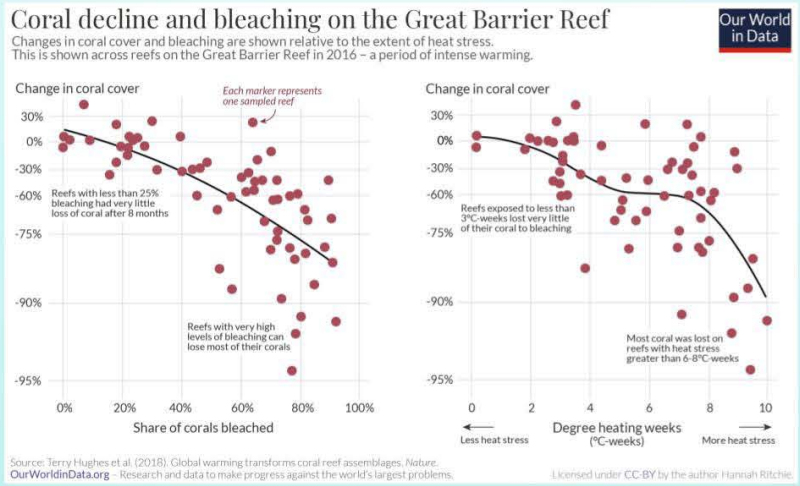

Figure 3: More heat stress and coral bleaching lead to a decline in coral cover.

Conclusions/Future Research

Reduce greenhouse gas emission to slow global warming.

Marine biodiversity would suffer without coral reefs.

Cooling and Shading

Coral Breeding and Adaptation

Stabilization

Biocontrol

Field Treatments

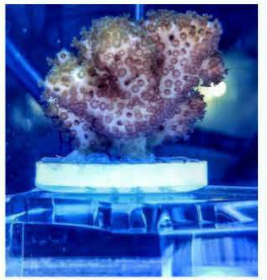

Figure 4: Coral being treated with probiotics

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Our World in Data