



The Recuperating Ability of Cauliflower Coral (*Pocillopora Damicornis*) and Staghorn Coral (*Acropora* sp.) to Temperature Stress

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Abstract

Rising temperatures of the world's waters place our coral reefs under stress, which can lead to coral bleaching, where corals expel their zooxanthellae. With the alarming rates of the depletion of coral reefs over the last 30 years, it is crucial to comprehend the corals' ability to recover from stressful situations. In this experiment, we will investigate the recuperating ability of the corals *Pocillopora Damicornis* and *Acropora* sp. by exposing them to elevated temperatures that causes these corals to "stress", and then measure their rate of recovery through the comparison of color pigmentations with healthy corals. Terminal branch samples will be collected, with some being placed in a separate tank with aspects equivalent to the original location to establish a control group. The others will be placed in a tank filled with various tools (heaters, water pumps, and artificial light) that can be altered to meet requirements needed to create a "stressful situation", where atypical conditions take place to disrupt the critical symbiotic relationship between the coral and its zooxanthellae (responsible for the color pigmentation). Thermometers and cameras will be set around the tank to record the progression. We will gradually increase the temperature from ~30°C, to 32°C, and 34°C within two day intervals. After looking for and noting signs of stress, we will gradually decrease the water temperature to ambient and will observe the more resilient species based on returning color pigmentation. Understanding the resilience levels corals possess plays a vital role in the preservation of the reef's crowning glory.

Keywords

Recuperating Ability; Temperature Stress; *Pocillopora Damicornis*; *Acropora* sp.



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ABSTRACT

Rising temperatures of the world's waters place our coral reefs under stress, which can lead to coral bleaching, where corals expel their zooxanthellae. With the alarming rates of the depletion of coral reefs over the last 30 years, it is crucial to comprehend the corals' ability to recover from stressful situations. In this experiment, we will investigate the recuperating ability of the corals *Pocillopora Damicornis* and *Acropora* sp. by exposing them to elevated temperatures that causes these corals to "stress", and then measure their rate of recovery through the comparison of color pigmentations with healthy corals. Terminal branch samples will be collected, with some being placed in a separate tank with aspects equivalent to the original location to establish a control group. The others will be placed in a tank filled with various tools (heaters, water pumps, and artificial light) that can be altered to meet requirements needed to create a "stressful situation", where atypical conditions take place to disrupt the critical symbiotic relationship between the coral and its zooxanthellae (responsible for the color pigmentation). Thermometers and cameras will be set around the tank to record the progression. We will gradually increase the temperature from ~30°C, to 32°C, and 34°C within two day intervals. After looking for and noting signs of stress, we will gradually decrease the water temperature to ambient and will observe the more resilient species based on returning color pigmentation. Understanding the resilience levels corals possess plays a vital role in the preservation of the reef's crowning glory.

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