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Global Warming and Human Pollution as the Major Causes of Coral Bleaching

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Coral Bleaching

Coral bleaching occurs while corals degrade or expel their dinoflagellate symbionts in reaction to environmental stressors inclusive of expanded sea floor temperature and elevated UV radiation[1]. Although corals can reacquire symbionts and recover in weeks to months, recovered corals may also grow slower and feature decreased fecundity in comparison to formerly unbleached corals, giving bleaching-resistant corals an ecological benefit after bleaching events. In extreme cases, bleaching may also arise on the scale of hundreds to thousands of kilometres and radically modify coral cover and composition with coral mortality from bleaching events approaching 100% in extreme cases. Branching corals inclusive of acroporid and pocilloporid corals are often more susceptible to bleaching and mortality than are massive corals, allowing the slower-developing huge corals to be extra chronic on reefs after bouts of robust bleaching [2]. Bleaching occasions now no longer only lower live coral cover however additionally offer large areas for seaweed colonization, and these seaweeds can prevent corals from re-establishing if herbivores aren't present in enough numbers to suppress seaweed colonization and growth. Additionally, large-scale bleaching and mortality of branching corals can suppress fish populations that are dependent on live coral for shelter and food.

Causes of coral bleaching: global warming and human pollution

With the drastic changes of climate in recent years, global warming has caused seawater temperatures to rise, and the greenhouse effect has also caused "ocean acidification" that weakened coral's absorption of calcium carbonate [3]. When coral reefs aren't strong enough to resist natural erosion, it will take longer for them to recover from bleaching. The optimal water temperature variety for coral increase is 20-28°C. If the water temperature is decrease than 18°C or more than 30°C, maximum corals will expel the symbiotic algae in their body, causing bleaching or even death [4]. If the range of typhoons in Taiwan this year is expected to live low, the situation of coral bleaching will seem pessimistic while the sea temperature remains high. It is worth noting that short-term changes in sea temperature will not cause bleaching. The main motive of massive-scale coral bleaching is often the continuous abnormal warming of the seawater.

Can coral recover from bleaching?

In some instances, corals can recover from bleaching. If conditions return to normal, and stay that way corals can regain their algae, go back to their shiny colours, and survive. However prolonged hotter temperatures and different stressors, like bad water quality, can leave the living coral in a weakened state [5]. It can war to regrow, reproduce, and withstand disease – so is very susceptible to coral diseases and mortality. It can take decades for coral reefs to fully recover from a bleaching event, so it is vital that those events do not arise frequently. If we continue burning fossil fuels at our current rate, severe bleaching events are likely to hit reefs annually via way of means of the middle of the century. This would be devastating for coral reefs as they could have no chance to recover.

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