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ASSESSING THE EFFECTS OF CLIMATE CHANGE ON CORAL REEF ECOSYSTEMS

MADAN LAL REGAR

Sidhi Vinayaka College of Education, Kakrod, Haryana

ABSTRACT

The richness, structure, and function of coral reef ecosystems are all jeopardized by the effects of climate change. By looking at important stressors such ocean warming, acidity, and rising sea levels, this study evaluates these consequences. Coral bleaching, caused by very warm water, causes the expulsion of symbiotic algae, which in turn reduces energy production and increases death rates. The calcification processes, which are essential for coral development and reef integrity, are hindered by ocean acidification, which is caused by increased CO2 levels. The physical destruction and erosion of reef structures are further exacerbated by the combination of increasing storm severity and rising sea levels. This report compiles information from worldwide monitoring systems, drawing attention to regional differences and pinpointing areas that are particularly at risk. The article delves into the ripple effects on marine life that is related with reefs, specifically looking at how biodiversity and fish populations have declined. Additionally, we take a look at the social and economic effects on communities who rely on reef ecosystems for things like coastal protection, fishing, and tourism. Policies to decrease emissions of greenhouse gases, marine protected areas, and the regeneration of coral reefs are some of the adaptation and mitigation tactics covered. To ensure coral reef resilience in the face of persistent climate change and to design successful conservation initiatives, it is crucial to understand these complex implications. Findings from this study highlight the crucial need for immediate international action to protect these marine habitats.