Coral survival's past is key to its future

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Florida Institute of Technology researchers are taking an historical approach to predict the extinction risk of reef-building corals. Led by Robert van Woesik, professor of biological sciences, the researchers are examining past events to gain insight into how these corals today may fare through climate change.

"We found strong relationships between past regional extinction events and modern coral vulnerability, suggesting that extinction events are not merely chance events but depend on the biological characteristics of the coral species. Our historical approach improves the accuracy of extinction-risk assessment," said van Woesik.

Corals are highly sensitive to climate change. Their risk of extinction is increasing at an unprecedented rate as the oceans continue to warm. Assessing this danger, however, is difficult because of limited data.

Van Woesik's team looked at Caribbean extinction during the Plio-Pleistocene era and extinction risk as determined by the International Union for the Conservation of Nature (IUCN). Through the Plio-Pleistocene era, the Caribbean supported more diverse coral reefs than today and shared considerable overlap with contemporary Indo-Pacific reefs. Regional extinction in the past and vulnerability in the present suggest that Pocillopora, Stylophora, and foliose Pavona are among the most susceptible to local and regional isolation. These were among the most abundant corals in the Caribbean Pliocene. Therefore, a widespread distribution did not equate with immunity to regional extinction. The strong relationship between past and present vulnerability

suggests that regional extinction events are trait-based and not merely random episodes.

"We found several inconsistencies between our data and the IUCN scores, which suggest a need to critically re-examine what constitutes coral vulnerability," said van Woesik.

The research is due to be published in *Biology Letters*.

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