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TITLE: The 2014?2017 global-scale coral bleaching event: insights and impacts

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ABSTRACT:

2014?2017 was an unprecedented period of successive record-breaking hot years, which coincided with the most severe, widespread, and longest-lasting global-scale coral bleaching event ever recorded. The 2014?2017 global-scale coral bleaching event (GCBE) resulted in very high coral mortality on many reefs, rapid deterioration of reef structures, and far-reaching environmental impacts. Through the papers in this special issue of Coral Reefs entitled The 2014?2017 Global Coral Bleaching Event: Drivers, Impacts, and Lessons Learned, as well as papers published elsewhere, we have a good analysis of the 2014?2017 GCBE and its impacts. These studies have provided key insights into how climate change-driven marine heatwaves are destroying coral reef ecosystems: (a) The 2014?2017 GCBE is unique in the satellite record in its spatial scale, duration, intensity, and repetition of bleaching. (b) The impacts have been the most severe ever seen at many reefs. (c) Timing of observations matters and needs to be considered during the analysis of impacts. (d) On both global and local scales, the intensity of heat stress and impacts varied. (e) We continue to see important differences among and within coral taxa, with key roles played by algal symbionts and the microbiome. (f) Heat stress and bleaching both play a role in subsequent disease, which plays a key role in mortality. (g) Impacts ripple far beyond corals, with significant changes to the fish and invertebrate community that may last decades. (h) The structure of both individual coral?s skeletons and entire reefs has been eroded much more quickly than previously realized. (i) The 2014?2017 GCBE provided little support for the proposed ?lifeboat? hypothesis, whereby deep or mesophotic reefs serve as a means of coral reef salvation. (j) While marine protected areas (MPAs) provide protection from local stressors, they not only do not protect reefs from global-scale stressors, but also here is also little evidence they provide significant resilience.

SOURCE: Coral reefs

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