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Research News

# Climate change, coastal development lead to nearshore coral declines

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Scientists find slower growth in Mesoamerican Barrier Reef System corals



To track a reef's health, researcher Justin Baumann drills a coral core in Belize.

[Credit and Larger Version \(/discoveries/disc\\_images.jsp?cntn\\_id=299144&org=NSF\)](/discoveries/disc_images.jsp?cntn_id=299144&org=NSF)

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New research compares the growth rates of corals in the Belize Mesoamerican Barrier Reef System, the world's second-largest reef system. Over the past decade, the growth rate of corals living closer to shore has declined.

Coral reefs are a critical source of food, income and storm protection for millions of people. Nearshore corals grow in warmer and more nutrient-rich waters than their offshore counterparts and, because of these warmer temperatures, are believed to offer a glimpse into the coral reefs of the future.

The growth decline may indicate that any previous environmental advantage for corals located closer to shore has diminished, likely due to climate change and human activities such as coastal development that subject nearshore corals to higher levels of stress. The findings also suggest that over time climate change will slow the growth of both nearshore and offshore corals.

"This research leaves us with troubling questions, like whether corals will adapt to future conditions and, if not, how that will impact the health and well-being of the millions of people around the world who rely on reefs for their food, income and protection from storms," said marine biologist Justin Baumann of the University of

[North Carolina at Chapel Hill \(/cgi-bin/good-bye?https://www.unc.edu/posts/2019/08/28/climate-change-human-activity-lead-to-nearshore-coral-growth-decline-in-worlds-second-largest-reef/\)](https://www.unc.edu/posts/2019/08/28/climate-change-human-activity-lead-to-nearshore-coral-growth-decline-in-worlds-second-largest-reef/).

Baumann, lead author of a paper in *Global Change Biology* ([/cgi-bin/good-bye?https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14784](https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14784)) reporting the findings said, "We need to carefully manage and protect reefs so they have the best possible chance to acclimate, adapt and, hopefully, survive the impacts of climate change."

Daniel Thornhill, a program director in NSF's [Division of Ocean Sciences](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1459522&HistoricalAwards=false)  [<https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1459522&HistoricalAwards=false>](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1459522&HistoricalAwards=false), which funded the research, agrees. "These findings demonstrate that we need to carefully consider how people living along the coast interact with their environment. Land use practices are leading to increased sedimentation and nutrient loads in coastal waters, compromising the health and integrity of nearshore reefs."

-- NSF Public Affairs, (703) 292-7090 [media@nsf.gov](mailto:media@nsf.gov) (<mailto:media@nsf.gov>)