Caribbean coral findings may influence Barrier Reef studies

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Griffith University's Dr. Emma Kennedy and University of Exeter's Dr. Jamie Stevens. Credit: Jan Shears: University of Exeter

Corals may be better equipped to tolerate climate change than previously believed, according to research led by Dr Emma Kennedy from Griffith University (Queensland, Australia).

Working with scientists from the University of Exeter in the UK, Dr Kennedy says the findings - published in the journal *Coral Reefs*—relate to an extensive study of Caribbean corals, but could influence future analysis of Australia's Great Barrier Reef.

Using a high-resolution molecular screening technique called Real Time-PCR, the researchers confirmed that the partnership between Symbiodinium D—a symbiotic algae associated with resistance to coral bleaching—and Caribbean corals is more common than had been supposed.

"Corals rely on a relationship with algae in order to get energy via photosynthesis," says Dr Kennedy, a Postdoctoral Research Fellow at Griffith's Australian Rivers Institute, within the School of Environment.

"However, under stressful conditions such as increased temperatures, this relationship can be disrupted, resulting in a loss of the algae in an event known as bleaching. In an extreme event, this can lead to coral death.

"Our study focused on populations of the Mountain Star coral, *Orbicella annularis*, a widespread and prominent reef species in the Caribbean.

"Understanding its ability to weather the pressures of a changing climate, in particular rising sea temperatures, is a key question for conservationists."

Symbiodinium D was found to be present in low abundances at almost every location the researchers tested, from Tobago to the Bahamas. As well as being geographically widespread, it was also more common in individuals, found on average in more than 30 per cent of the corals in each location.

Dr Kennedy says previous studies have shown that if *Orbicella annularis* contains just a small amount of Symbiodinium D it can sometimes respond better to stress events—such as heatwaves—and is more likely to avoid coral bleaching.

A 2007 research paper (Mieog et al. 2007, *Coral Reefs*) reported the presence of Symbiodinium D in 71 per cent of coral colonies tested on the Great Barrier Reef.

Having completed her PhD at the University of Exeter, Dr Kennedy's latest research involves assessing the responses of coralline algae to ocean acidification and warming. It aims to determine whether coralline algae can be used to track the impacts of climate change in the Great Barrier Reef.

More information: link.springer.com/article/10.1 … 1264-4/fulltext.html

Provided by Griffith University

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