

# Dissolved organic matter in the water column may influence coral health

March 4 2008

---

Bacterial communities endemic to healthy corals could change depending on the amount and type of natural and man-made dissolved organic matter in seawater, report researchers from The University of Texas at Austin Marine Science Institute and Mote Marine Laboratory in Sarasota, Florida.

Healthy corals naturally exude a surrounding mucous layer in which a complex population of bacteria exists. Recent studies have indicated that some coral diseases may be linked to community shifts in this bacterial population.

In experiments with a common reef building coral in the Florida Keys, Chris Shank of the University of Texas Marine Science Institute and Kim Ritchie of Mote Marine Laboratory found an obvious shift in the composition of the coral bacterial community resulting from changes in the pool of surrounding dissolved organic matter.

Dissolved organic matter in the water column near Florida Keys coral reefs comes from a variety of natural sources, including coastal mangroves, seagrasses, and plankton, as well as man-made sources, including sewage effluent. The composition of dissolved organic matter surrounding Florida Keys coral reefs has likely changed in recent decades due to growing coastal populations.

“When coastal ecosystems are physically altered, the natural flow of dissolved organic material to nearby coral ecosystems is disrupted with

potentially harmful consequences for the corals,” said Shank, assistant professor of marine science.

Shank and Ritchie, manager of the Marine Microbiology Program at Mote, placed *Montastraea faveolata* coral fragments in aquaria filled with water collected from either Florida Bay or from an offshore bluewater site.

Dissolved organic matter concentrations are much greater in Florida Bay than in offshore waters and typically have different chemical characteristics. Water collected from these distinct locations used for the coral incubation experiments represented the variable nature of dissolved organic matter experienced by corals in the middle and lower Florida Keys.

They found that the microbial community of healthy corals shifts measurably when exposed to water from Florida Bay, suggesting the microbes that normally play a role in coral immunity may be out-competed by potentially problematic bacteria. In combination with increased water temperatures, this is an example of the type of compounded stressors known to cause health problems in corals, or “reef deterioration.”

The scientists reported their results today at the Ocean Sciences Meeting in Orlando, Florida.

The scientists’ research is part of their larger effort to investigate the link between alterations to the south Florida ecosystem and Florida Keys coral ecosystems. Coral reefs there, as with coral reefs around the world, are increasingly threatened by rising water temperatures, advancing ocean acidification and rapidly rising coastal populations.

Corals are especially susceptible to coastal alterations because they

commonly exist in shallow waters at the interface of land and sea.

Shank and Ritchie are planning a series of experiments to more closely evaluate the chemical nature of the water column dissolved organic matter surrounding the corals in the Florida Keys and identify shifts in potentially harmful bacterial populations.

Source: University of Texas at Austin

Citation: Dissolved organic matter in the water column may influence coral health (2008, March 4) retrieved 24 April 2024 from

<https://phys.org/news/2008-03-dissolved-column-coral-health.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.