New study links dredging to diseased corals

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In a world-first study published today, researchers say dredging activity near coral reefs can increase the frequency of diseases affecting corals.

"At dredging sites, we found more than twice as much coral disease than at our control sites," says the lead author of the study, Joe Pollock, a PhD candidate from the ARC Centre of Excellence for Coral Reef Studies (Coral CoE) at James Cook University (JCU) and the Australian Institute of Marine Science (AIMS).

"Corals require both light and food to survive," Pollock explains. "And unfortunately, dredging impacts corals on two fronts: increased turbidity means less light for photosynthesis, while increased levels of sediment falling onto the coral can interfere with their ability to feed."

Already low on energy, the corals then must spend further energy cleaning the extra sediment from their surface. Such an energy imbalance can lead to chronic coral stress.

"Just like in any other organism, it seems that chronic stress can lead to increased levels of disease in corals," Pollock says.

In the past 20 years, the frequency of coral disease has risen across the world, and has become a significant factor in global coral reef decline. In the Caribbean, disease has diminished coral cover by as much as 95 percent in some locations.

This is the first study to examine the link between dredging and coral

disease in nature. It was conducted near Barrow Island, off the West Australian coast. The site is close to where an 18-month, 7-million cubic metre dredging project took place, developing a channel to accommodate ships transporting liquefied gas to a nearby processing plant. The site was in otherwise very good condition.

The most common diseases affecting corals after dredging events are the 'white syndromes', where the coral tissues fall off, leaving behind exposed, white coral skeletons. These coral diseases are chronic, and there are fears that they may linger well after the completion of dredging operations.

Dr Britta Schaffelke from AIMS, a co-author on the study, says numerous environmental stressors have been suggested as potential drivers of coral disease.

"Turbidity and sedimentation are critical pressures on the health of coral reefs and are affected by many human activities, especially in the coastal zone," Schaffelke says.

"What this study does is highlight a direct link of coral disease to sedimentation and turbidity."

Coastal industries provide economic stability, food security and reliable energy to billions of people around the world. As the pace of coastal development and demand for larger harbours escalates, the impact of elevated sediment and turbidity on the health of marine species is now a worldwide concern.

"Dredging is a pressing issue on many coral reefs throughout the world, including the Great Barrier Reef," says Pollock.

"A solid understanding of the impacts of dredging, sediment and

turbidity on coral health will be indispensable in the development of well-informed management and monitoring strategies for vulnerable coral reef ecosystems," he concludes.

More information: *PLoS ONE* DOI: 10.1371/journal.pone.0102498

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