

Voracious sponges save reef

January 13 2009

Tropical oceans are known as the deserts of the sea. And yet this unlikely environment is the very place where the rich and fertile coral reef grows. Dutch researcher Jasper de Goeij investigated how caves in the coral reef ensure the reef's continued existence. Although sponges in these coral caves take up a lot of dissolved organic material, they scarcely grow. However, they do discard a lot of cells that in turn provide food for the organisms on the reef.

Caves in coral reefs are the largest and least well known part of the reef. De Goeij investigated coral caves near Curacao and Indonesia. Up until now it had been assumed that cave sponges could only eat by filtering the non-dissolved particles from the seawater. This research demonstrated, however, that the caves contain far more dissolved material than non-dissolved material.

The reef's guts

Cave sponges take up enormous quantities of dissolved organic material from seawater. The question is whether they merely take up the material or whether they also process it. De Goeij revealed that the sponges process forty percent of the material and take up sixty percent. This should lead to a doubling of the sponges' biomass every two to three days. However, cave sponges scarcely grow.

The coral caves are densely populated and so there is scarcely any space to grow. Instead of growing the cave sponges rapidly rejuvenate their filtration cells and discard their old cells. This short cell cycle is unique

for multicellular organisms and to date was only known to occur in unicellular organisms. The production and breakdown process of the sponge cells mirrors that in the human intestinal tract.

Eating and being eaten

Coal reef maintains itself in a remarkable manner. The algae and corals on the reef produce dissolved organic material. Before this material flows into the open ocean sponges in the caves take it up. The sponges rapidly filter enormous quantities of water and convert dissolved material into particles. These particles are in turn consumed by the algae and corals on the reef. In this manner, the various inhabitants of the reef facilitate each other's survival.

Sponges produce many substances that could contribute to the development of new medicines, antibiotics and cosmetics. However, rearing sponges is far from easy. Unravelling how these sponges function could solve this problem and this research has contributed towards this.

Jasper de Goeij's research was funded with a grant from WOTRO Science for Global Development, one of NWO's scientific divisions. De Goeij carried out his work at the Royal Netherlands Institute for Sea Research.

Source: Netherlands Organization for Scientific Research

Citation: Voracious sponges save reef (2009, January 13) retrieved 26 April 2024 from <https://phys.org/news/2009-01-voracious-sponges-reef.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.