

CP288: Sponge Ecology, Cuba

CP289: Sponge bioerosion on coral reefs, Cuba

Dr Pelayo Salinas

Sponges are one of the simplest of the multicellular organisms, effectively being a collection of a few cell types specialized for pumping large quantities of water and removing particles from the water as it passes through the sponge. Despite their simplicity, sponges form a significant component of the coral reef fauna across the world with a range of important functional roles including nutrient cycling, benthic-pelagic coupling (linking benthic and pelagic processes through their feeding activities), bioerosion and providing a home for a variety of vertebrate and invertebrate organisms. Despite the wide range of important functional roles that sponges fulfill still very little is known of coral reef sponge ecology, and of particular importance is the erosion of carbonate substrate, which is one of the most destructive eroding forces on reefs (working against the secretion of calcium carbonate by corals and other calcifying organisms), and the filtering of water column.

Given the large decline in coral and other reef organisms on Cuban coral reefs in recent decades sponges have become a major component of reef fauna, and this project will begin by developing a sponge monitoring programme in order to try and understand the spatial distribution of sponge diversity and factors that are responsible for determining the distribution patterns. A long-term sponge temporal monitoring programme will also be developed. Both projects will include an assessment of both epilithic sponges (those growing on the surface of the reef) and bioeroding sponges (those growing in the reef structure). In addition, carbonate blocks will be used to mimic reef substrate and to measure actual erosion rates. Ultimately, this project will determine measure spatial and temporal variation in sponge assemblages which is important for understanding the contribution of sponges to coral reef ecosystem functioning.

Reading list:

Bell JJ. 2008. Functional Roles of Marine Sponges. *Estuarine Coastal and Shelf Science* 79:341-353

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Schonberg, C.H.L., 2002. Substrate effects on the bioeroding demon sponge *Cliona orientalis* 1. Bioerosion rates. *Marine Ecology* 23:313-326.