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Diversity in the globally intertwined giant barrel sponge species complex
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The giant barrel sponge facilitates the recovery of coral fragments after a tropical storm in Taiwan

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Observations conducted in the aftermath of typhoon Soudelor (category 5) at the site Fongguie, Taiwan (23°32'16N, 119°32'41E), revealed extensive reef degradation. Corals and sponges were knocked over or broken, and many coral fragments were spread across the reef. Some of these fragments, mainly *Porites*, *Acropora*, and *Pocillopora*, had wound up inside the oscules of locally abundant giant barrel sponges (*Xestospongia testudinaria*). This phenomenon, where new coral fragments were lying in the sponges' osculum, was observed multiple times (Fig. 7.1a). Other giant barrel sponges had large adult branching and plating coral colonies growing in their osculum (Fig. 7.1b–d), presumably representing growth of fragments deposited inside the sponges during previous storms.

The sponges harboring large coral colonies were morphologically distorted but did not seem to be affected by the presence of these corals. Tests with fluorescent dye indicated the sponges still had a functioning pumping system, even when the osculum was entirely covered by the coral. In the Caribbean, *Xestospongia muta* has been observed to offer stony corals shelter from strong hydrodynamic forces (Hammerman and Garcia-Hernandez 2016). It seems that under the right circumstances coral larvae or coral fragments can find refuge in or on giant barrel sponges, and in the case of Taiwan the presence of the giant barrel sponges seems to enhance coral reef recovery after tropical storms.

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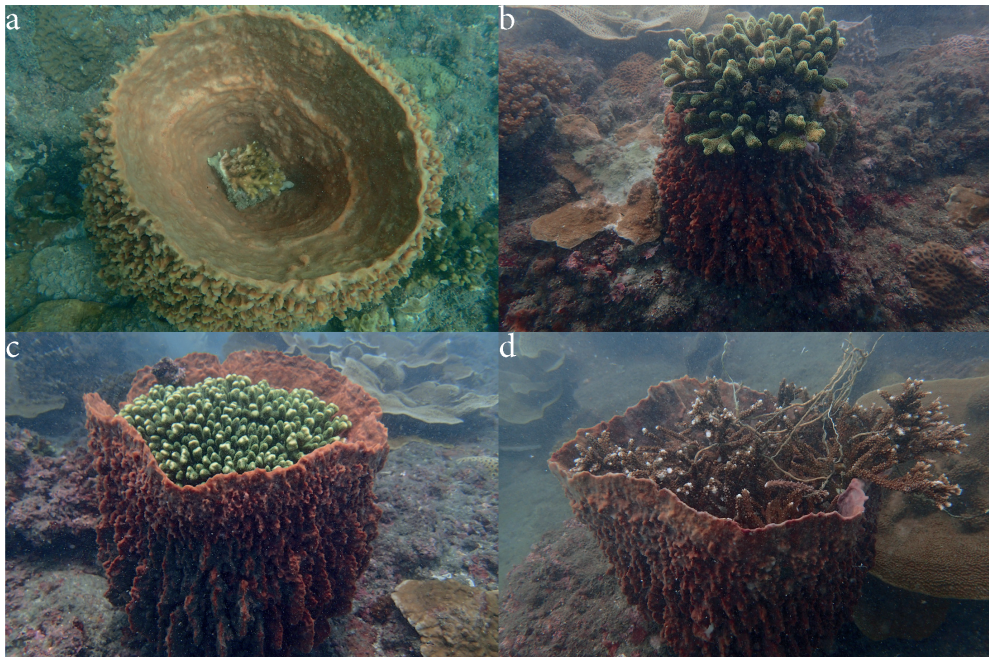


Figure 7.1. Photographs of new (a) and adult (b–d) coral fragments growing inside the Pacific giant barrel sponge *Xestospongia testudinaria*.

