Reef Relief: Investigating the Allelopathic Effects of Soft Corals on the Health of Large and Small Polyp Stony Corals

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Allelopathy is the process in which one organism produces compounds that influence the growth, development, and survival of other organisms in its vicinity. Although more commonly associated with plants, marine and freshwater allelopathy are known from a number of different animal taxa. Both inter specific sponge-to-sponge and sponge-to-coral allelopathy have been identified. However, fundamental animal allelopathy questions still exist, and researchers are only just formulating insightful studies to address the significant gaps in knowledge. Because hard corals are widely impacted by bleaching, understanding the potential allelopathic properties of soft corals on hard corals may help resource managers better control the bleaching phenomenon worldwide. A panel of five soft coral species were grown in 10 gallon tanks along with a panel of five hard coral species in an effort to answer the broad question: Are soft corals allelopathic towards hard corals? Algal profusions complicated interpretation of results, but observational data attest to the possibility of soft coral allelopathy. During bursts of algal growth, the following trends were observed: algae grew extensively on or around the hard corals, but were inhibited near soft corals Capnella sp., Zoanthid sp., and Xenia sp. In total, approximately 20% of hard corals experienced mortality and nearly 50% bleached, supporting the possibility of soft coral allelopathy. Cyphastrea sp., Oxypora sp., and Favites pentagona exhibited the most pathology. A head-to-head study between the aforementioned soft and hard corals elucidated patterns of pathology on an interspecific basis.