

**Evaluating microplastic exposure for the orange-footed sea cucumber, *Cucumaria frondosa*: Retention of plastics within respiratory trees and the effect on metabolism**

Plastic pollution in the ocean is a major concern for marine organisms, across all trophic levels as well as throughout the water column. A benthic filter feeder that might be negatively affected by plastic pollution is the orange-footed sea cucumber, *Cucumaria frondosa*. In a laboratory study, microplastics were introduced to *C. frondosa* individuals in ambient seawater. Oxygen consumption rates were collected over 30-minute intervals for three weeks to evaluate whether the presence of microplastics had an effect on metabolism. Dissections were conducted at the conclusion of the experiment to determine whether or not microplastics were retained within the respiratory system of *C. frondosa*. Results demonstrate that the variable of time had a significant effect on oxygen consumption rates. Microplastics were found in the respiratory trees in each individual exposed to the microplastic treatments. These data suggest that the respiratory system of *C. frondosa* can be negatively impacted by the presence of microplastics and add to the body of literature of the impacts of plastic pollution in the marine environment.

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