

Degradation of discarded appendicularian houses by oncaeid copepods: evidence from in situ observations using a video plankton recorder

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Oncaeid copepods are ubiquitous and abundant in marine ecosystems and have been known to be associated with discarded appendicularian houses. However, the lack of quantitative data on the colonization and feeding of discarded houses by oncaeid copepods has hampered the estimation of their contribution to house degradation in the field. We investigated the vertical distributions of oncaeid copepods and discarded houses and observed their behavior by optical sampling using a video plankton recorder (VPR) in surface waters (<100 m) of the Kuroshio region off Japan. In situ observations using the VPR showed that oncaeid copepods were commonly associated with discarded houses; the proportion of individuals attached to discarded houses reached saturated values of 25–39% at house concentrations above 2000 houses m⁻³, suggesting that feeding by oncaeids was not limited by encounters at house concentrations typically observed in the upper 50 m. On board observations and gut content analyses confirmed that oncaeid copepods ingested both house structures and adhering particles. Individual feeding rates of the dominant *Oncaea* species on houses, determined by measuring fecal pellet production and assimilation efficiency, varied from 0.13 to 1.3 µg C ind.⁻¹ d⁻¹ or 10–37% body C d⁻¹. Our results indicate that the oncaeid copepod community consumed up to 10% of house biomass each day in the upper 100 m, and show that the oncaeids play a substantial role in house degradation in surface waters.

Keywords: Video plankton recorder, Marine snow, Discarded appendicularian houses, Oncaeid copepods, Feeding

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