Survival and dispersal of turf algae and macroalgae consumed by herbivorous coral reef fishes

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The mechanisms by which algae disperse across space on coral reefs are poorly known. We investigated the ability of four common Caribbean herbivorous fish species to disperse viable algal fragments through consumption of macroalgae and subsequent defecation. Fragments of all major algal taxa (*Phaeophyta, Rhodophyta*, and *Chlorophyta*) were found in 98.7 % of the fecal droppings of all fish species; however, the ability to survive gut passage and reattach to a substrate differed between algal taxa. While survival and reattachment approached zero for *Phaeophyta* and *Chlorophyta*, 76.4 % of the fragments belonging to the group *Rhodophyta* (mostly species in the order *Gelidiaceae*) survived gut passage, and were able to grow and reattach to the substrate by forming new rhizoids. Our results thus show that *Gelidid* algal species are dispersed by swimming herbivores. While the relative contribution of this mechanism to overall algal dispersal and recruitment in a wider ecological context remains unknown, our findings illustrate a previously undescribed mechanism of algal dispersal on coral reefs which is analogous to the dispersal of terrestrial plants, plant fragments, and seeds via herbivore ingestion and defecation.

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