

UNRAVELING THE HERBIVORY MISMATCH: COMPARING GRAZING PREFERENCES AND ACTUAL DIETS OF HERBIVOROUS FISH

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RESUMO

Herbivorous fish are key contributors to the functioning of reef ecosystem. Their foraging activities contribute to nutrient and material recycling, connecting energy from primary producers to the apex predators. However, the contribution of herbivorous fishes to the reef ecosystem functioning is not uniform; rather, it can be defined as a multifaceted process, with different species collectively contributing to several processes, including bioerosion, sediment production, macroalgae and detritus removal, provision of space for sessile organisms' settlement, modification of successional dynamics of microscopic autotrophs, and algal farming. Although patterns of grazing and the influence of the benthic community on herbivorous fishes are widely studied in a species-specific context, the drivers governing fish herbivory at larger scales within the reef realm remain poorly understood. Here, we conducted a global systematic review of fish herbivory in reef environments, identifying disparities among functional groups (FG), including their drivers of consumption, differences between grazed substrates and actual ingested targets, and the consequences of their herbivory processes. Most studies were conducted in the Indo-Pacific and Caribbean regions, while only a small fraction was in the South Atlantic, revealing significant global knowledge gaps. Most FG graze on the epilithic algal matrix, while gut content analyses also show the ingestion of a diverse macroalgae groups, cyanobacteria, microalgae, and animal matter. The differences between grazed and consumed targets suggest their roles are complementary, with various herbivorous fish species playing different roles depending on the region of the world. Although the roles of herbivores are multifaceted, they face similar anthropogenic impacts and local stressors, such as ocean warming, diseases and hurricanes. Therefore, understanding their particular roles is crucial for the conservation of marine ecosystems in the context of rapid global changes.

Palavras-chave: Reef environments, Functional roles, Fish diet, Conservation, Systematic review.

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