Exclusion studies reveal the interactions between herbivores in structuring tropical seagrass meadows

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Seagrasses provide important habitat that delivers ecosystem services and provides food to a wide diversity of herbivores globally. In the Great Barrier Reef we find large seagrass meadows that are grazed on by a diverse herbivore community. This presents a challenge for managers trying to conserve herbivores, the habitats they rely on and maintain ecosystem service delivery in coastal ecosystems. Herbivore communities can structurally alter seagrass meadows in positive or negative ways depending on their size, feeding methods and grazing intensity. These structural changes can alter the ecosystem services provided by the seagrass meadow. We carried out exclusion experiments targeting each herbivore group individually and in combination in subtidal and intertidal seagrass meadows in Queensland, Australia to understand how herbivores can structure meadows and the interactions between herbivore groups. Our results show different feeding strategies of herbivores in each habitat, especially megaherbivores, which impact the meadow in different ways. The effects on biomass, shoot density and shoot height depended on the type of grazing observed. Grazer mediated changes in meadow structure will have important implications for the ecosystem services delivered by tropical seagrass ecosystems and the management of these ecosystems, including incorporating grazing dynamics into monitoring projects.