Title: “Inter-annual trophic plasticity of two dominant seagrass-associated fishes in Toliara lagoon (southwestern Madagascar)”

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Abstract

In the seagrass zone of Toliara (southwestern Madagascar), the local small-scale fishermen deploy seine mosquito nets that likely affect the structure of seagrass meadow systems and associated fishes. Nevertheless, the responses of these associated fishes communities to the intense marine resource exploitation using such destructive fishing gear remain unknown for the WIO region, especially in southwestern Madagascar. The present study aims to evaluate the trophic diversity of fishes living in seagrass beds and to assess their trophic plasticity. More specifically, we compared the diet of two dominant species in the catches of local fishermen (the rabbitfish *Siganus sutor* and the goby *Oplopomus oplopomus*) and we evaluated the potential variation in their trophic ecology. The sampling of fishes was achieved by collecting the catches of two small-scale fishermen using seine mosquito nets off Ankilibe only in December 2017, off Ankilibe and Sarodrano in December 2018. This sampling strategy allowed us to make spatial and temporal comparisons. In order to assess the diet of these two dominant fish species, stomach content analyses were performed on 40 specimens/species/village/year. Using a binocular microscope, animal preys were identified at class level and assigned to planktonic or benthic compartment. Plant items were classified as either phytoplankton, fragments of algae, or seagrass. The trophic niche of each fish population was quantified in two ways: as a percentage of occurrence and as a mean percent
composition of each item in the gut content. The rabbitfish has gut filled by 50% of detritus, 40% of fragments of seagrass, and 10% of phytoplankton. The diet of the goby was more diversified and composed of 40% of detritus, 25% of copepods, 30% of gastropods (body or just operculum) and 5% of ostracods. The results of isotopic analyses (in progress), will improve our knowledge of the diet of these two fish species, which are decreasing progressively in small-scale fishermen catches due to heavy fishing pressure.

**Keywords:** seagrass, fishes, gut content, stable isotopes, trophic diversity, Madagascar