

## Maintaining fish biomass the key to conserving reef fish biodiversity

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A school of blackspotted rubberlips (*Plectorhinchus gaterinus*) in the waters off Madagascar. A new study appearing in the journal Marine Ecology Progress Series has found that conserving fish diversity in Madagascar's coral reef systems may depend on maintaining fish biomass above critical levels, according to scientists from WCS (Wildlife Conservation Society) and ES Caribbean. Credit: T. McClanahan/WCS



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Based on the findings, the authors recommend that fisheries managers work to ensure that <u>fish</u> biomass does not fall below these critical levels. The authors of the paper titled "Managing coral <u>reef</u> fish community biomass is a priority for biodiversity conservation in Madagascar" are Tim R. McClanahan of WCS and Catherine Jadot of ES Caribbean.

"Our research found that the most effective way to maintain species and their ecological roles is to prevent fish biomass from falling below a critical level," said McClanahan, WCS Senior Conservationist and the lead author of the study. "This also leads to widespread benefits provided by these species rather than restricting benefits to a few special places. In a poor country where food and hunger are constant issues, managers would not want to lose the contributions of each species to food."

The researchers analyzed data on fish communities in coral reef systems in four regions around Madagascar and three islands in the Mozambique Channel. The data were collected between 2006 and 2015 in 152 reefs, and 23 families of fish, including surgeonfishes, triggerfish, jacks, wrasses, and other species were evaluated. Estimations on the size of fish encountered along transect lines allowed researchers to calculate biomass or the wet weight of fish in each transect.

Looking for correlations with factors such as water depth, <u>sea surface</u> <u>temperature</u>, productivity, algae and coral cover, the researchers found only weak connections between <u>fish biomass</u> and both human influence and environmental characteristics. Rather, the strongest correlation was



between fish diversity and total biomass. Fortunately, about 65 percent of the reefs had biomass levels of more than 600 kilograms per hectare that was suggested as a critical cutoff point. Values lower than this point were often associated with low rainfall urban centers that may lack other sources of food beside fish and where the authors suggest good fisheries management is most critical to avoiding starvation.

"The study reveals how important it is to have a benchmark for evaluating the health of fisheries and the consequences of going below a benchmark," added McClanahan. "In poor countries such as Madagascar that lack resources for management, the 35 percent of reefs below this threshold are locations where management efforts should be focused."

More information: TR McClanahan et al, Managing coral reef fish community biomass is a priority for biodiversity conservation in Madagascar, *Marine Ecology Progress Series* (2017). DOI: 10.3354/meps12267

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