# Effectiveness of Brazilian Marine Protected Areas for macro and mesopredators fish species

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Marine protected areas (MPAs) are important spatial management tools for fish populations by protecting them completely or partially from extractive human uses. As a result an increase of fish density, biomass and size of target species are readily observed within their limits. In this work we aimed to verify the effectiveness of Brazilian MPAs regarding the protection of macro and mesopredators fishes, due to the high fishing pressure exert above them. Four MPAs located within coral reef zones were selected, and were collected using underwater visual census, following a Beyond-BACI design. Inside MPAs were observed higher abundance ($F=2,06$; $p<0,05$), biomass ($F=1,7$; $p<0,05$) and mean size values ($F=1,8$; $p<0,05$) for macrocarnivores fish group only. Although not significant, greater mesopredator abundance was observed outside protected areas, however higher biomass was found inside MPAs. These results suggest that despite the conservation objectives by which MPAs were created for they are effective in providing safe refugee from fisheries for high trophic level species such as serranids. In the absence of top predators mesopredators species increased in numbers, revealing how fisheries can affect the top down regulation of marine food webs.

Keywords: Coral reef fish, top-down regulation, fisheries, protection

Short title: MPA effectiveness for predator fish