

Marine Protected Area and Fisheries

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EDITORIAL

Marine protected areas have long been recognized as effective tools for spatial management, biodiversity conservation, and fisheries enhancement, prompting Member States Parties to the Convention on Biological Diversity (CBD) to agree in 2010 to cover 10% of their coastal and marine areas with MPAs by 2020 (Aichi Target 11). Even though global no-take coverage of at least 30% of the world's oceans by 2030 is required, MPAs will cover 5.3 percent of the world's oceans in 2020, with 2.5 percent in no-take marine reserves providing protection. Despite the fact that the 10% objective has not been attained, the number of MPAs established has increased exponentially over the last decade as governments hurry to meet their international obligations, resulting in increased disputes with small-scale fisheries (SSF) despite the fact that many MPAs allow SSF and other operations in partial protection zones or even the entire MPA, and other stakeholders in coastal areas.

Although studies from around the world have proven the benefits of no-take or total protection zones in terms of population and ecological recovery (i.e., the "reserve effect"), evidence of socio-economic advantages is less well documented. This has resulted in a more comprehensive, interdisciplinary, and ecosystem-based approach to the management of SSF and MPAs in recent years, taking into account human and socioeconomic factors, particularly for SSF. Management plans, regulations, collaboration between fishers, scientists, and managers, effective monitoring and data collection, promotion of sustainable fishing practices, enforcement, compliance, and evaluation of the socio-economic benefits of MPAs, including ecosystem services, especially fisheries provisioning services, are all required for successful coexistence of SSF and MPAs. This special issue on MPAs and Small-Scale Fisheries brings together MPA and SSF essays from throughout the world (Australia, Bahamas, Cuba, Galapagos, Greece, Mauritania, and Portugal) that address some of these concerns.

Evaluation by comparing the no-take zone with fished zones, utilizing baited remote underwater recordings, the impacts of protecting sea grass meadows in New South Wales, Australia, on fish abundance and variety (BRUVs) is done. Although there were no significant variations in fish assemblages, species richness, or total abundance between locations, there were substantial

variations over time at most locations and several species showed persistently higher abundance at specific locations. The importance of protecting sea grass ecosystems is highlighted in this study, as are the challenges of quantifying the reserve effect when confounding factors such as seasonal change in fish assemblages and abundances and low fishing pressure in fished zones exist also used in the Bahamas, researchers used the same noninvasive BRUV approach to analyses faunal communities and habitat usage in shallow water sea grass and mangrove ecosystems. This is one of the few studies to demonstrate that BRUVs may be used to measure community structure and faunal abundance in very shallow, near shore settings. The work is useful for spatial planning and conservation in the Bahamas, where the coastal zone is under a lot of human pressure.

Commercial species (Haemulidae, Lutjanidae, and Serranidae families) were compared within a relatively small (3000 ha) MPA in Cuba with similar fished regions outside the MPA using underwater visual census techniques (UVC). The lack of a reserve effect was found in the research, likely due to the MPA's limited size, which does not provide appropriate protection, particularly for species that establish spawning aggregations outside the MPA, where they are more vulnerable to fishing. The study emphasizes the necessity of incorporating information on critical species' biology and movement ecology into MPA design. In the Galapagos Marine Reserve (GMR), over exploitation of the sea cucumber *Isostichopus fuscus* lead to the closure of the fishery in 2016. Based on new estimations of livestock parameters and estimates of usable biomass based on habitat mapping, the research provides an updated stock assessment of this valuable resource. The authors offer a method for determining the sea cucumber's total authorized capture (TAC) under the GMR. The National Park of Banc d'Arguin (PNBA), Mauritania, is the largest MPA in West Africa, with a marine area of 5400 km². Researchers are using eco-trophic modeling to investigate the role of the PNBA in sustaining SSF and industrial fisheries, with a focus on the economic evaluation of the SSF and the PNBA's contribution to continental shelf fisheries beyond the MPA's borders.

They also conduct a contingency evaluation to assess the SSF's heritage dimension under several management scenarios. The article also emphasizes the importance of stakeholder participation and empowerment in the management of an MPA that has

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evolved from essentially subsistence SSF to commercial fisheries that are putting increasing pressure on natural resources and on an ecosystem that provides important provisioning services to commercial fisheries beyond the MPA. The reported ineffectiveness of MPAs around the world is due to a lack of compliance and enforcement of restrictions. The great majority of SSF vessels in the European Union cannot be electronically monitored, unlike large-size fishing vessels that can be monitored by the Vessel Monitoring System (VMS). Several studies have developed a unique method for mapping fisheries infringements in Hellenic waters using official control records. As a result, mapping fishing infringements and effort can serve as a foundation for better spatial management, monitoring, and enforcement of fishing rules Moutopoulos et al.

The fiercely controversial Arrábida Marine Park was finally implemented in 1999, with one full protection area, four partial protection areas where limited fishing activities (octopus pots, traps, and jigs) are allowed, and three buffer zones where all SSF and recreational fishing activities are allowed. The study emphasizes the significance of incorporating stakeholders at all stages of MPA implementation, monitoring, and administration, as well as the persistent lack of acceptance. The articles in this issue of *Journal of Aquaculture Research and Development* highlight the complexities and challenges of evaluating the advantages of MPAs and harmonising conservation-driven MPA goals with SSF's socioeconomic and human components).