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# MARINE PROTECTED AREAS: MULTI-USE MANAGEMENT (MUM) VS. NO-TAKE ZONES (NTZ) AND THE EFFICIENCY OF LOCALLY MANAGED ARTISANAL FISHERY

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## Abstract

Multi-Use Management (MUM), with complex zoning and regulation of uses (including artisanal fishery), is at least as efficient as NTZ management in terms of natural heritage conservation. In addition, it is compatible with sustainable development (including artisanal fisheries).

*Keywords: Artisanal fishery, Management, MPAs, Provence*

For most environmentalists, managers and stakeholders, the paradigm of a Marine Protected Area (MPA) is the banning of all human activities, mainly artisanal fishery (No-Take Zones, NTZs), but sometimes also diving, anchoring and even sailing and bathing. Most Mediterranean MPAs are based on a NTZ, usually accompanied by a buffer area (where only recreational fishing is prohibited) and a transitional area (no prohibitions, just an obligation to abide by the general regulations - which are not enforced elsewhere) [1].

In fact, how 'natural' NTZs really are can be challenged. In the Mediterranean Sea, some major top predators, such as the monk seal *Monachus monachus* and sharks, are locally or functionally extinct, respectively. Under these conditions, considering that the catch by an extinct population of monk seal was of the same order as the current catch by fishers, the complete ban on artisanal fishing (small-scale fishing) can generate an artificial deficit in top predators [2-3].

The Port-Cros Archipelago (PCA) MPA is located within the Port-Cros National Park (eastern Provence, France, NW Mediterranean Sea). It was established in 1963. The management of the marine area of the PCA MPA can clearly be assigned to the MUM type (Multi-Use Management), characterized by complex zoning of the marine part of the MPA, based on the uses, conservation goals for the habitats and ecosystems and clearly displayed priorities (artisanal fishing rather than recreational fishing) (Fig. 1). MUM management is strongly contrasted with NTZ management, where any form of human activity is prohibited. In addition to the ban on spear fishing, angling and trawling, the PCA MPA has its own artisanal fishing regulations, enshrined in a fishing charter. Regulations regarding maximum vessel length, soak time, mesh size, net length, number of hooks and traps, are more restrictive than those established by French national regulations and by local regulations, established by the *Prud'homme des pêcheurs* (fisher's guild) of Le Lavandou [3]; these regulations are strictly enforced, in contrast with those of most of Mediterranean MPAs, which are actually 'paper parks'. To be allowed to fish inside the PCA MPA, each fisher has to sign the charter each year and abide by its rules. In addition, fishers have to communicate details of their catches to the MPA managers via a fishing logbook; the charter is updated annually, based on scientific monitoring (state of fish populations, CPUE – Capture per Unit Effort) and in consultation with the fishers [4]. The ban on recreational fishing, of which the catch may prove to be greater than those of artisanal fishers, and is of a magnitude [5] that is not fully perceived by the public at large, is a key point in the social acceptance of this set of constraints (fishing charter) by artisanal fishers.

It is worth noting that, as far as the conservation of the natural heritage and the functioning of ecosystems are concerned, MUM management, as practiced in the PCA MPA, is at least as efficient as NTZ management [6]. In addition, it is compatible with sustainable fisheries in particular, sustainable development in general, and fits well with the concept of the socio-ecosystem; beyond the dogmatic ideas of some environmentalists and managers, it is better to have MPAs allowing a responsible artisanal fishing, which really work, than hundreds of NTZs that are only 'paper parks'. Finally, the MUM and NTZ management should not be considered as in opposition to each other and may prove to be complementary: in fact, many effective Mediterranean MPAs, i.e. the very few MPAs which are not paper parks, can be regarded as intermediate between MUM and NTZ management.

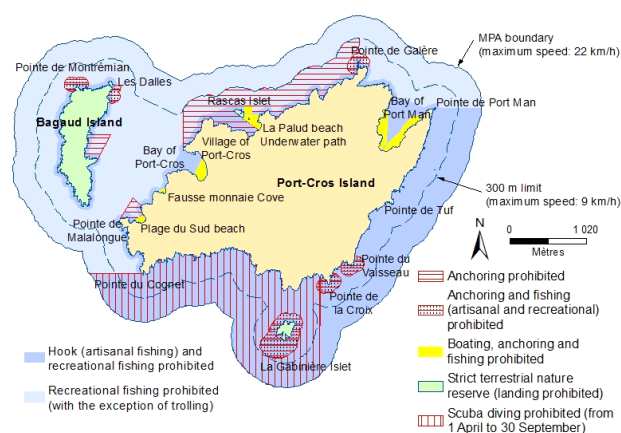


Fig. 1. Artisanal and recreational fishing regulations within different areas of the Port-Cros Archipelago MPA. Areas where anchoring, artisanal and recreational fishing are prohibited are reserved for diving.

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## References

- 1 - Boudouresque C.F., Cadiou G. and Le Diréac'h L., 2005. Marine protected areas: a tool for coastal areas management. In: *Strategic management of marine ecosystems*, Levner E., Linkov I., Proth J.M. (eds.), Springer publ., Dordrecht: 29-52.
- 2 - Boudouresque C.F., Cadiou G., Guerin B., Le Diréac'h L. and Robert P., 2004. Is there a negative interaction between biodiversity conservation and artisanal fishing in a Marine Protected Area, the Port-Cros National Park (France, Mediterranean Sea). *Sci. Rep. Port-Cros Natl. Park*, 20: 147-160.
- 3 - Astruch P., Boudouresque C.F., Rouanet É., Le Diréac'h L., Bonhomme P., Bonhomme D., Goujard A., Ruitton S. and Harmelin J.G., 2018. A quantitative and functional assessment of fish assemblages of the Port-Cros Archipelago (Port-Cros National Park, north-western Mediterranean Sea) *Sci. Rep. Port-Cros Natl. Park*, 32: 17-82.
- 4 - Cadiou G., Boudouresque C.F., Bonhomme P. and Le Diréac'h L., 2009. The management of artisanal fishing within the Marine Protected Area of the Port-Cros National Park (northwest Mediterranean Sea): a success story? *ICES J. Mar. Sci.*, 66: 41-49.
- 5 - Font T. and Lloret J., 2014. Biological and ecological impacts derived from recreational fishing in Mediterranean coastal areas. *Rev. Fish. Sci. Aquacult.*, 22 (1): 73-85.
- 6 - Thibaut T., Blanfuné A., Boudouresque C.F., Personnic S., Ruitton R. et al., 2017. An ecosystem-based approach to assess the status of Mediterranean algae-dominated shallow rocky reefs. *Mar. Pollut. Bull.*, 117: 311-329.