

Towards Ecosystem Conservation and sustainable artisanal fisheries in the Mediterranean basin

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Summary

The cooperation EU-ENPI CBC-Med project ECOSAFIMED (2014-15), carried out in Spain, Italy and Tunisia, aims to promote sustainable artisanal fishing practices to improve the environmental status of the benthic communities in Mediterranean Sea. The main premise of this project is that relatively well-preserved benthic communities can still be found in areas not affected by the use of commercial fishing gears. Moreover, a good management of the local artisanal fishery is also a key aspect to preserve these habitats and the related economic activities. In order to evaluate the conservation status of the benthic communities, a set of parameters were analyzed for a number of key species. ROV transects were performed between depths of 60-120m depth to evaluate such parameters. No noticeable differences in the structure of the benthic communities were found when comparing areas with different fishing activity levels. However, low effort areas showed better health status for their key structuring species. We also found poorly known communities in low effort areas, in which forests of *Paramuricea macrospina*, *Parantipathes larix*, *Spinimuricea klavareni*, and *Paramuricea placomus* could be observed. These results indicate that the activity of artisanal fisheries does not seriously impact the marine benthos and local policy makers should be encouraged to promote artisanal fisheries in the Mediterranean.

Introduction

It is generally assumed that marine benthic communities are better preserved in areas that are reasonably affected by the activities of artisanal fishing fleets (Kaiser et al. 2000). Species richness and biodiversity tends to be higher in those areas in opposition to commercially trawled locations. The harmful effect of bottom trawlers over the composition and structure of benthic communities has been widely documented on soft bottoms, but the impact of artisanal activities on hard grounds remains unknown. Indeed, this study aimed to understand the contribution of sustainable artisanal fisheries in the conservation of benthic communities at a regional scale, an emerging issue in marine spatial

planning and management. The structural complexity of such assemblages deeply relies on the so-called ecosystem engineers (e.g. corals, sponges or seagrasses, among others). This species provide a three-dimensional habitat that significantly increases the diversity and productivity of the associated fauna, through the promotion of breeding, feeding and refuge locations for a large number of commercially important species. Since engineering species are usually long-lived and slow growing, human induced disturbances can have significant and long-lasting effects. We evaluated the status of the benthic communities affected only by the artisanal fishing fleet by means of ROV transects and experimental fishing surveys.

Material and Methods

A three-way comparable study was carried out in three areas of the Western Mediterranean Sea: Cap de Creus and Minorca Channel in Spain; Ponza Archipelago and Gulf of Patti in Italy; and La Galite Archipelago and Eskerkis Bank in Tunisia. Specific areas with only artisanal fishing activities were selected in each region (selected by VMS data and interviews with fishermen), for which two levels of impact were considered (low and high). Approximately 20 hours of ROV transects were performed in each area, and 30 experimental fishing nets of a common métier (spiny lobster trammel net) were set in each area. All species were identified and measured in the ROV transects and in the fishing surveys, as well as traces of the mechanical impact of lost gears

Results and Discussion

No noticeable differences in the structure of the benthic communities were found when comparing areas with different fishing activity levels. However, low effort areas showed a better health status for their key structuring species, and dead colonies were most common in high effort areas (Figure 1). Different substrates were evaluated: rocky substrates (Figure 1A) and maerl beds (Figure 1B). The most significant results were the large proportion of epiphytized colonies in rocky substrates. Poorly known benthic communities were found in low effort areas, like communities dominated by *Paramuricea macrospina*, *Parantipathes larix*, *Laminaria rodriguezii*, *Spinimuricea klavareni*, and *Paramuricea placomus*. The occurrence of rare species like *Petrobiona massiliana*, *Funiculina quadrangularis*, *Centrostephanus longispinus* and *Tethya aurantium* were detected in low effort areas. These results indicate that the activity of artisanal fisheries does not seriously impact the marine benthos and local policy makers should promote artisanal fisheries in the Mediterranean, since these practices seem to be the best way to exploit the marine resources in a sustainable manner, in consonance with the conservation of the benthic communities. Modifications of the artisanal fishing gears should, however, be implemented in a mid-term basis in order to reduce as much as possible the observed impacts that fishing gears have over key structuring species.

References

Kaiser, M., Spence, F.E., Hart, P.J.B. 2000 Fishing-Gear Restrictions and Conservation of Benthic Habitat Complexity. *Conservation Biology* 14 (5) 1512-1525

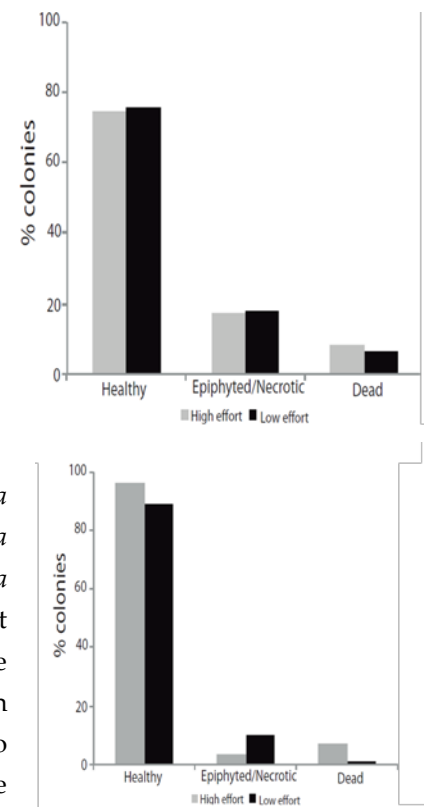


Figure 1. Percentages of gorgonian colonies according healthy status, epiphytic/necrobiotic or completely dead in rocky substrate (A) and in maerl bed (B)