MEASURES FOR THE CONSERVATION AND MANAGEMENT OF MARINE BIOLOGICAL RESOURCES OF ELOUNDA BAY (CRETE ISLAND)

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Abstract
Although a management plan including measures for the conservation and maintenance of marine biological resources of Elounda Bay was proposed in 2007 by the Hellenic Centre for Marine Research (HCMR), no progress has yet been made for the implementation of the proposed or any other similar measures. Despite the financial crisis in Greece, the regional/local authorities still retain a crucial role regarding the management procedures in terms of leading and engaging with the local community and the private sector in order to promote the protection of this specific marine ecosystem and the sustainable development of the area.

Keywords: Coastal management, Conservation, Fisheries, Cretan Sea

The economy of Elounda, located in the northeastern part of the island of Crete, was based on farming, fishing, salt extraction from the Venetian saltpans and emery mining until the 1970s when it was discovered by tourism. Elounda then developed into a resort renowned for beautiful scenery and its world-famous luxury hotels. Elounda Bay itself covers a surface area of 6.5 km^2, while its inner shallow part (2-9 m depth), sheltered from waves and currents occupies an area of 4.7 km^2, which is covered by a dense monospecific *Caulerpa prolifera* meadow (Fig.1). Elounda Bay is connected to the outer Mirabello Bay through three straits: two northern ones are located between the north coasts of Mirabello bay, Spinalonga and Kolokitha Islands; the south strait was artificially created in 1897. The uninhabited Spinalonga Island is a popular tourist attraction (historical Venetian fortress, abandoned leper colony settlement), with large boats transferring tourists to and from the island on a daily basis during the summer period. The local authorities (i.e., the former Lasithi Prefecture), after several consultations with local fishermen, in an effort to implement restrictive measures for the fisheries exploitation of Elounda Bay, funded an HCMR (Hellenic Centre for Marine Research) study (2006), the aim of which was to update the historical scientific data available for the region in order to propose a management plan allowing for the protection of its marine ecosystem and the sustainable exploitation of its marine biological resources. Sampling on a bimonthly basis was carried out at 22 stations in the study area (2006-2007) using a local fishing boat (Fig. 1). The abiotic (e.g. nutrients, chloroplastic pigments, organic carbon) and biotic (e.g. macrobenthos, zooplankton, demersal fish) variables in the water column and/or the surface bottom sediments of the study area were measured, analysed and described in detail in the final report of the study [1]. In addition, a field experiment was designed to investigate the rates of sediment resuspension and deposition along the itinerary of the boats transferring tourists to and from Spinalonga Island during the summer period.

The results of the project led to the following recommendations for the formulation and development of a management plan for the area: 1) The inner part of Elounda Bay is a very important habitat for the development of juvenile fish as well as certain cephalopod species, thus contributing to the conservation and maintenance of the marine biological resources of the Bay [2]. Therefore, Elounda Bay should be awarded a special fisheries regime for its protection and conservation. 2) High speed of the large tourist boats should be reduced to a minimum, in order to minimize the resuspension rate of the sediments caused by the propellers, especially in their approach to the shallow areas of the bay. This type of environmental disturbance could have a negative effect on nature conservation and the sustainable management of the marine biological resources of this specific semi-closed marine ecosystem. 3) The competent authorities in co-operation with HCMR could fund a long-term monitoring programme of the Elounda Bay ecosystem to include an annual survey, especially during the summer period, leading to an environmental impact assessment of the area. 4) A feasibility study should be carried out in order to investigate the development and operation of a Fisheries Cooperative Enterprise (principal shareholders to be the professional fishermen of Elounda) for the cultivation and marketing of the edible bivalve Arca noae, to compensate for the proposed fishing ban in the inner part of Elounda Bay. The feasibility study (duration 18 months) should include a study of the growth rate of the molluscan species, its life cycle characteristics, its ecological preferences as well as different technologies and methods for its cultivation. It should be noted that this molluscan species is almost exclusively present in large quantities in the whole inner part of Elounda Bay. According to the results of the previous study [1], the carrying capacity of this marine ecosystem could support a profitable enterprise for cultivation and marketing of these bivalves. This initiative could also be used for the revival of traditional local customs and therefore as a tourist attraction, since the bivalve used to be served as a "special delicacy" by traditional cafeterias and taverns in "Clean Monday" (a moveable feast which marks the beginning of Lent in the Greek Orthodox Easter calendar). However, no progress has been made since 2007 for the implementation of the proposed or any other measures. A loss of confidence in those institutions that have failed to provide the public with an economic and social umbrella against the financial crisis is strongly expressed nowadays. Despite the merging of some of the regional/local authorities (Lasithi Prefecture, Region of Crete), they still retain a crucial role regarding the sustainability of this management process in terms of leading and engaging with the local community and private sector (professional fishermen, owners of the tourist boats, hotel owners and other stakeholders).

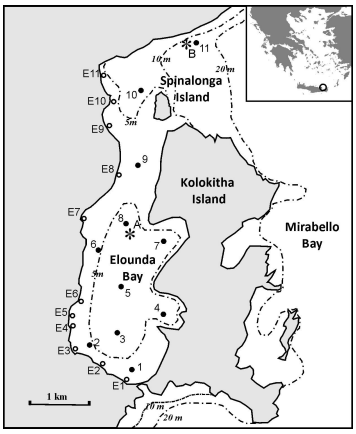

Fig. 1. Location of sampling stations in Elounda Bay (Crete Island)

References

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