

BIODIVERSITY MARINE ASSESSMENT OF “AGUELI ISLAND” (WILAYA OF ALGIERS), ALGERIA

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Abstract

The bioecological assessment and knowledge of marine fauna and flora play a key role in the establishment and management of MAPs. It provides essential informations for making management decisions and measuring their impacts. The present study has for main objective the establishment of (i) a sampling strategy adapted to the study site, (ii) a method of *in situ* observation scuba diving (Underwater Visual Census) to (iii) inventory ichthyological and megabenthic biodiversity in order to lead to (iv) a reference state (called “zero” state).

Keywords: Biodiversity, Phytobenthos, Zoobenthos, Fishes, Algerian Sea

Introduction

MPAs are efficient management tools to protect Mediterranean marine environment. In Algeria, a relative agreement to Coastal Planning Plan (PAC) for Algiers coastal area has been signed in Algiers between Algerian government and the PNUE in 2001 [1]. The Réghaïa coasts is a representative areas of environment-development problematic; (i) its integration in Algerian metropolitan area in accelerated accretion, (ii) the natural bio-strategic patrimonial importance (RAMSAR) and (iii) the threats that surround (sectorial pressures and intervenants multiplicity) are all factors explaining ecological and socio-economic issues [2].

Materials and methods

The study area is located in the municipalities of Réghaïa and Hraoua, about 30km east of Algiers center (North Africa). It covers an area of approximately 111 ha and covers the spaces between [0 and 20 m] deep near the island Agueli (36°47'39" N - 3°21'7.99" E) (Fig.1). It is the only natural site at the biogeographical zone of Algiers. The sampling was conducted in spring period (March-May, 2015) according to the standardized method of Underwater Visual Census (UVC) and distance-sampling principle [3-5]. For the data representativeness, a sampling random laminate systematic strategy has been suitable.

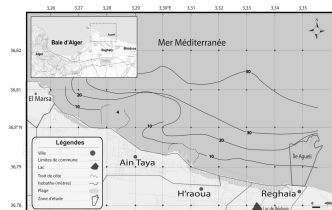


Fig. 1. Map of the study area

Results

The survey results [6] allowed reporting a total of 91 megabenthic species and 42 ichthyologic species divided over 39 sampling stations corresponding to a total surveyed area estimated to 6528 m² (39 transects). The megabenthos qualitatively dominated by Cnidaria (27.78%) and Echinodermata (22.22%) family. The study of ichthyologic population allowed a total abundance of 960 individual essentially dominated by Labridae family, the Sparidae and the Serranidae. Besides the two transects dominated by *Sarpa salpa*, the overall density recorded for 385 individuals was 0.06 ind./m² for a total biomass of 25.35 kg (194g /50m²). The evolution of the megabenthic and fish species richness shows a similar trend dependent on the substrate type (Fig.2).

Discussion

A significant number of ecological, patrimonial, protected statuses, threatened, endemic and invasive species have been observed in the study area. Among them, *Posidonia oceanica* (the extension of its lower limit was observed), *Cystoseira amentacea* var. *stricta* (endemic species), *Pinna rudis* and *Pollicipes pollicipes* (protected status). Others are classified as invasive species like *Asparagopsis armata*, *A.taxiformis*, *Oculina patagonica* and *Codium fragile* and need to be closely monitored. Bottoms around the

Agueli island has a moderately rich fish fauna, compared with results obtained by other authors in the Mediterranean. The demographic stand structure is majority constituted from small individual reflecting overfishing effects (nets, lines and spearfishing), the reproduction success and the importance of the sector as nursery and fry. Moreover, an escape behavior was noted in most of the targeted individuals in the study demonstrating the important spearfishing activity. Among various species observed, *Labrus viridis* is the only one which has an IUCN conservation status of vulnerable (VU).

Conclusion

This study contributed to the enrichment of knowledge and assessment of megabenthic and ichthyological biodiversity around Agueli Island, conducive to the establishment in the near future of a MPA. It's a reference state (called “zero” state) from which it will be possible to evaluate changes related to dynamics population and the stresses due to global changes as well as the “Island effect” on biodiversity.

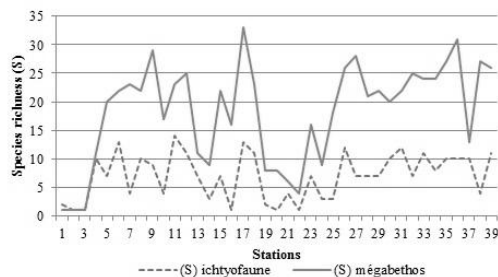


Fig. 2. Evolution of megabenthic and fish species richness by sampling station.

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