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ON THE CIRCALITTORAL BENTHIC COMMUNITIES IN THE ASINARA MARINE PARK

SUI POPOLAMENTI CIRCALITORALI DELL'ISOLA DELL'ASINARA

Abstract *- This work reports the results of various surveys made in the North Western part of Asinara National Park. It was oriented to the description of deep benthic communities. A conspicuous number of rare species and biogeographically interesting populations for the Mediterranean Sea are present in this area, in particular coralligenous formation are present in typical form as well as in enclave and platforms.*

Key-words: *macrobenthos, coralligenous, marine protected areas, Sardinian Sea.*

Introduction - Studies on deep benthic communities have increased recently in the Mediterranean interesting particularly the coralligenous assemblages (Ballesteros, 2006; Cudoni *et al.,* 1991). The uniqueness characters of marine habitats of the Asinara island are well known. These peculiarities originate by several factors associated to the environmental conditions, to historical vicissitudes as well as to the particular state of indirect protection, at first, and direct after. The high heterogeneity of the benthic communities of Asinara is also due to the sinuosity of the coast and to its degree of slope. For this reason a great number of micro-habitat for surface unit, can be found. There are rare and endangered species and populations of the Mediterranean, mostly present in the circalittoral o f the western part. Beside Asinara is a place of high intensity deep currents.

Materials and methods - The field activities started in June 2007. The underwater surveys were made by a R.O.V. equipped with sampling pliers and a video camera. The inspected transects were digitally registered on a magnetic support, their position was taken by a differential GPS. The transects were localized by Side Scan Sonar. Thirteen transects and a sufficient number of spots were made in places known for their high naturalistic value. In order to check the bottom morphology, each transect was preceded by a high definition ecosonar ship route.

Results - Species of high biogeographical interest, as *Phyllariopsis purpurascens* (C. Agardh) Henry & South, *P. brevipes* (C. Agardh) Henry & South e da *Chondrymenia lobata* (Meneghini) Zanardini, were present at the cliff base. This landscape characterize the coastal morphology of the island. This species were already reported (Cossu *et al.*, 1990) but today their important diffusion is fully understood. In this side, at a greater depth, the great Phaeophyceae biocenosis is found often neighboring to the sciaphilic association of *Cystoseiretum zosteroidi*s. The coralligenous association in the island is particularly developed under 50 m depth. The one who was better structured was present on rocky emergencies surrounded by sand. In addition to its typical elements it is characterizd by dense colonies of gorgonians mostly *Eunicella cavolinii* and *Paramuricea clavata* and sponges, with *Axinella polypoides* facies particularly present between 40 and 50 m depth, often with *Umbraulva olivascens* (P.J.L. Dangeard) G. Furnari. The high density of *A. polypoides* demonstrate the

presence of high deep bottom currents towards South, close to Sardinia and Asinara channel. Some areas are characterized by a impoverished pre-coralligenous and coralligenous, with presence of low densities of *Mesophyllum lichenoides* (J. Ellis) M. Lemoine, *Peyssonnelia rubra* (Greville) J. Agardh, *Sphaerococcus coronopifolius* Stackhouse, *Phyllophora crispa* (Hudson) P.S. At a greater depth, nearly 80 m, the biocenosis of coastal detritic bottoms, with Free Melobesiae facies was found. This facies can be classified in the *Phymatolitho-Lithothamnietum coralloidis* association, also typical of high speed current bottoms. The main species were: *Lithothamnion coralloides* (P.L. Crouan & H.M. Crouan) P.L. Crouan & H.M. Crouan, *Phymatolithon calcareum* (Pallas) Adey & D.L. McKibbin e *Spongites fruticulosus* Kützing. The deep area between 60 and 90 m of the extreme North part of the island is characterized by circalittoral bioclastic sands subjected to strong deep currents. The mega-ripples were oriented toward 240° with presence of *P. purpurascens* anchored to clastics mixed to sand and gravels. *Laminaria rodriguezii* Bornet is fixed to big rocks, were numerous individuals of *Palinurus elephas* were sheltered. Those species are typical of circalittoral assemblages in high bottom pulsating currents sites, were there is homeothermy in the water column and high nutrient content due to up-welling. This condition is demonstrated by the presence of calcareous rhodoliths in the ripples concavity. From the sand of the North West area, at 80 m depth, some rocky outcrops, with soft lines, merged. These formations belong to platform coralligenous. The concretions were usually horizontal and showed variable thickness that could reach various meters. These formations with the typical plate platforms are not common in the Mediterranean. At 110 m depth in the rare rocky outcrops there were caves and cavities with coralligenous concretions and animal domination. In the rocky cracks were the typical deep vagile fauna is sheltered, *Corallium rubrum* (L., 1758) was not found. But the species is surely present in this area because was interested by fishing some years ago. The rocky is densely covered by filter feeders and conglomerated sand with rare incrusting algae.

Conclusions - The great naturalistic value of the North and Western part of the Asinara island are stressed. An important contribution to its value is due to coralligenous assemblages. For this reason we think this work represent a useful starting point for further research programs. This research shud include the platform coralligenous close to the cliffs and the rocky outcrops surrounded by coarse sandy bottoms, colonized by gorgonians and the other associated fauna.

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