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Oral Presentations Contents

08/1047

The impact of human settlements on Indonesian coral reef ecosystems.

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Abstract

Coral reef ecosystems are increasingly subjected to multiple, interacting stressors associated with human activities including industrial pollution and resource extraction. As of present, few measures have been taken to address the impending threat of urbanization and few studies have directly assessed how human settlement patterns affect marine ecosystems despite the fact that important conservation areas occur in areas of high human density. A first crucial step is to study changes in the structure and composition of coral reefs through time and relate this to changes in the coastal environment. Here we present the historical impact of human settlement on coral reef environments adjacent to two major conurbations in Indonesia, namely Jakarta (Java) with > 10 million inhabitants, and Makassar (Sulawesi) with > 1 million inhabitants. We will combine data on the community composition of stony corals, sponges, large benthic foraminifera and molluscs, with detailed assessments of environmental data. The historical aspect of the project will focus on stony corals where we will assess spatio-temporal variation in composition and cover. With the temporal study, we aim to ascertain a detailed picture of variation in composition through time and space and in particular shifts in community in relation to reef resilience.

08/1089

Community structure and small-scale spatial distribution of *Arctica islandica* (Bivalvia) in Velikaya Salma Strait (Kandalaksha Bay, the White Sea)

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Abstract

Spatial distribution of high-density benthic community dominated by *Arctica islandica* (Bivalvia) in Kandalaksha Bay (the White Sea) is analyzed in present work. Ocean quahog inhabit upper sublittoral zone with sandy or mud bottom in the White Sea; high-density aggregations of this semi-borrowed mollusks altered sea bed acoustic image strongly. The combination of the side-scan sonar data with the traditional benthos sampling methods provides more detailed information for spatial distribution and community mapping rather than quantitative sampling alone. To study the spatial structure and composition of the community dominated by *A. islandica* the combination of side-scan sonar survey and quantitative benthic sampling was implemented followed by underwater photo image analysis for spatial aggregation of individuals.

Three different types of acoustic signal were detected on the map produced by side-scan sonar. Each type of signal reflects combination of bottom type, microtopography and structural characteristics of benthic community. Main influence of the last one is caused by density of *A. islandica*. It allows to create a high resolution map of *A. islandica* distribution using combination of qualitative sampling and side-scan sonar. Irregularity in distribution of different sizes of *A. islandica* and non-linear relationship between biomass of mollusks and the depth were evaluated.

08/1113

Effect of slicks on meroplankton distributions: the role of larval behaviour and ecological implications

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Abstract

During June 2009, we studied currents, hydrography and larval distributions around 4 surface, nearshore slicks in the Central Cantabrian Sea. The fronts moved toward the coast at velocities between 2 and 10.9 cm s^{-1} and accumulated cyprid barnacle larvae, crab zoeae, gastropod veligers and ascidians in most of the cases from the onshore side of the front, to impact in the coast. In general, both fast (cyprids and zoeae: 2.2 to 6.7 cm s^{-1}) and slow larvae (veligers and ascidian tadpoles: 0.13 to 0.15 cm s^{-1}) tended to accumulate when the ratio between their potential swimming abilities and the environmental convergence currents presents intermediate values. Thus, slicks may represent a key process for the biodiversity of benthic populations, by first concentrating and then transporting larvae to the coast, but the effectiveness of this mechanism depends on larval swimming competence.

08/1121

Comparison native and non-native biodiversity in the Southern seas of Eurasia.

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Abstract

We compare native and non-native biodiversity in the Southern seas of Eurasia on the base of own and published data. Both numbers of native and non-native species decline with salinity decrease in these seas: from species -rich Mediterranean Sea to lower-species Black Sea and to the species-poor Azov and Caspian seas. High biodiversity in the Mediterranean Sea might be explained diversity of environmental conditions, high salinity and temperature. From the Mediterranean to the Black Sea salinity drops at 21‰, the numbers of native and non-native species decrease both by factor of 3,5.

From the Black Sea to the Sea of Azov salinity drops at 7‰, numbers of native species decreased by factor of 3, 4, non-native species - by factor of 3, 3. The numbers of native species reduce by factor of 2, 5 in the Caspian Sea comparing with the Black Sea ones, numbers of non-native species reduce by factor of 2, 6. Thus, numbers of non-native species pro rata the numbers of native species in the Seas of Eurasia and the recognized theory that a rich many-component marine basin less invasible than poor diverse sea with many empty niches does not confirmed in the this case.

09/0075

Testing M@rBis (Marine Biodiversity information system) as a useful tool for the creation of Marine Protected Areas. Case study - Selvagens Islands.

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Abstract

M@rBis (Marine Biodiversity Information System), is a geo-referenced marine biodiversity information system. The main short-term objective of M@rBis is to provide the relevant information necessary to comply with the EU and international commitments regarding the extension of the Natura2000 Network to the marine environment in the waters under Portuguese jurisdiction. Furthermore, M@rBis will develop a comprehensive catalog of Portuguese marine biodiversity and the corresponding data holders providing a valuable reference and research tool for the scientific community.

In this talk we present the framework which lead to the creation of M@rBis, namely the design and implementation steps. We present a test case using the bibliography available about the Selvagens Islands (a marine and terrestrial Natural Reserve since 1971), analise the botlenecks and constraints found during the data acquisition, Marine Biodiversity Information System testing, and discuss the solutions developed to solve them. The effectiveness of M@rBis, as a decision support tool for the stake holders (ICNB) to make the best choices regarding the creation of MPA (Marine Protected Areas) will also be discused.

09/0078

Integrating biological data with substrate and bathymetric information in MPAs of oceanic islands

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Abstract

Several MPAs in the Island of São Miguel (Azores, Portugal) have poor information about the subtidal landscape and its associated biological communities. Despite previous work on marine biotope identification, the knowledge about such structuring factors as substrate localization and coastal bathymetry is still poor. Project GESMAR (PCT-MAC), a consortium of Spanish and Portuguese scientific teams, is financing further research on the biological assemblages that occur in two MPAs in the coast of São Miguel. Data on substrate and bathymetry was obtained using towed side scan sonar and used to build a Digital Terrain Model. Biological data was obtained through scuba diving. Macroalgal quadrate readings, macro invertebrate transept counts, and fish census were used to identify species location and abundance inside the MPAs. A community distribution chart was constructed superimposing the biological and the terrain data. This work provides a new tool for environmental management and opens a window for the implementation of this method in all coastal MPAs of the Macaronesian archipelagos.

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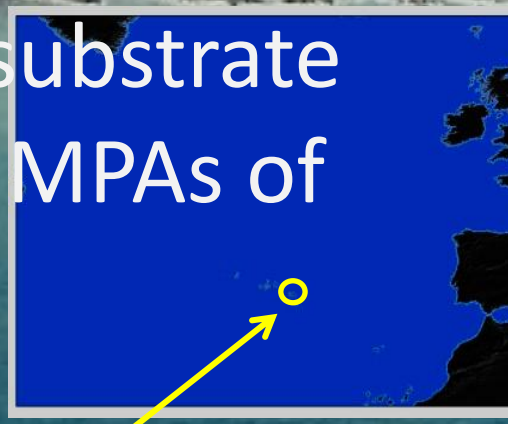
Integrating biological data with substrate and bathymetric information in MPAs of oceanic islands



Álvaro, N.V., A. L. Prestes, J. Dalmolin and A. I. Neto

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