CIESM Congress Session : Indicators and tools for biodiversity conservation

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Moderator's Synthesis

Biodiversity is expected to affect food-webs and the functioning of marine ecosystems, as well as their provision of goods and services to our societies. Unfortunately the relationship between services, functions and underlying biodiversity remains poorly understood. A pragmatic approach to advance the sustainable management of ecosystems, is used in the EU Marine Strategy Framework Directive (MSFD), which sets 11 qualitative descriptors for "good environmental status". Descriptor 1 targets that biological diversity is maintained.

Strategies and methodologies applied for the assessment are very diverse (a reviewed in the contribution of Hansjosten) with visual methods on benthic communities being the most used. This calls for standardization of the different approaches and methods and for the development of new general tools that can support biodiversity assessment and conservation. Underwater videography is certainly a powerful census tool that can be used to define both species abundances and distributions and also species-specific interactions (as shown in the paper of Krushel and colleagues). However, those methods are still subject to the spatial variability and habitat range of the different species. Presently there are gaps in terms of tools and indicators used to properly manage the spatial heterogeneity of habitats and species. It has been suggested (in paper of Mariani et al.) that modeling tools of population connectivity can provide the way forward in developing general, objective approaches for ecosystem management targeting biodiversity conservations. A significant advance in this field would be provided by trait-based approaches that can transcend species definition while focusing on the relevant aspects driving connectivity of diverse communities.

Additionally, marine protected areas are recognized as a very effective method for managing marine ecosystems and biodiversity, especially when smart networks of MPAs are set in place (see paper by Topalaglu et al.). To provide reference values for biodiversity maintenance a larger effort should be made to extend the areas that are presently assessed and monitored. To this end, the first study on biodiversity census conducted in Algeria (around the Augueli island and co-authored by Bachetarzi and Rebzani) was able to define a zero-state for a previously largely unknown region of the Mediterranean Sea and was very well received.

Assessments of biological diversity have the ambitious objective of describing the state of an entire ecosystem, often by using only a few selected indicators. This generally needs to take into account the fact that marine biodiversity is sensitive to- and also structured by- additional factors such as salinity, currents, temperature, etc. Models of connectivity combined with genetic analyses, visual census of species and the establishment of MPA networks can provide operation tools for marine spatial planning targeting biodiversity conservation and a sustainable use of marine ecosystems.

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