

## **The ICES Working Group on Comparative Analyses between European Atlantic and Mediterranean marine ecosystems – a new effort towards developing Ecosystem-based Fisheries Management (WG-COMEDA)**

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### **Summary**

ICES WG COMEDA is a new integrative and comparative platform of research to strengthen the scientific basis for regional ecosystem assessments and to move towards ecosystem-based management of living resources in the Atlantic and Mediterranean seas. COMEDA is one of the few scientific fora that bring together scientists from Atlantic and Mediterranean countries aiming at harmonizing and integrating the knowledge on populations, communities and ecosystems structure and function, as well as how these are affected by external stressors. COMEDA had its first meeting at the Institute of Marine Science in Barcelona, Spain, in April 2014, and here we report on the first steps of the WG.

### **Introduction**

The “Working Group on Comparative Analyses between European Atlantic and Mediterranean marine ecosystems to move towards an Ecosystem-based Approach to Fisheries” (WG-COMEDA) was established to integrate knowledge and resources from different areas of the Atlantic and Mediterranean, with emphasis on European Seas (Coll and Hidalgo, 2013). The primary goal of WGCAMEDA is to identify species (or species compartments) and/or ecological processes that are sensitive to environmental and anthropogenic stressors across geographic gradients. The group was established in 2014 and works in cooperation with other groups

within the ICES SCICOM Steering Group on the Regional Seas Programme (SSGRSP) such as ICES/HELCOM Working Group on Integrated Assessments of the Baltic Sea (WGIAB).

The group (Chaired by Marta Coll, France, and Hilmar Hinz and Manuel Hidalgo, Spain) met for the first time in Barcelona, Spain, 1–4 April 2014, and 20 scientists from European Atlantic and Mediterranean countries attended the meeting (Denmark, France, Germany, UK, Greece, Italy, Spain). The overall objective of this first-year meeting was to frame the work to be developed by WG. The group focused on identifying key sensitive ecological processes (from species and population processes, thorough inter-specific relationships, to trophic flows) to climate variability and fishing impact on Atlantic and Mediterranean ecosystems. The first approach, while not restrictive, was to focus on forage fish species in a broader sense, including benthic, demersal and pelagic fish that are prey of upper trophic level predators, and transfer a large proportion of energy in the ecosystems.

### **Ongoing discussions and analyses**

As a first step, COMEDA is currently analysing the forage species compartment, which is not only including small pelagic fish species but also demersal forage species (both fish and invertebrates), a key compartment in the flow of energy towards upper trophic levels of marine ecosystems. COMEDA is specifically working on the following topics:

1. *Key population traits and dynamics of forage species affecting community and ecosystem functioning.* The discussion of the group circulated around the portfolio effect and how to apply it to the demersal compartment of forage species. The group will investigate potential influence of the functional diversity and environmental heterogeneity across geo-graphic gradients.
2. *The resilience – resistance trade-offs at different levels of biological organization (population-community-ecosystem) of forage fish.* The group discussed different ways to investigate resilience and resistance variations across communities and ecosystems. First, the group discussed to use trait-based analyses to develop a functional description of the forage fish communities that can be used to measure the degree of resilience/resistance of communities. Second, the group discussed how to integrate this vulnerability of species within available ecosystem models to estimate the degree of resilience/resistance of ecosystems.
3. *Biodiversity and ecosystem traits changes at regional scales.* The group first discussed the ecological role of forage fish. To do that the group agreed in investigating the role of forage fish on the abundance, growth and condition (e.g. weight-at-age) of large marine predators, including gadoid species, marine mammals and seabirds. Second, the group discussed how to investigate the relationship between ecosystems and community traits to evaluate whether these relationships are universal or context-specific.

The group defined objectives for next year that mainly focus on compiling the information needed to test the scientific questions and perform the planned analyses for the three aforementioned topics. Having set this basis, the group will meet in May 2015 in Palma de Mallorca (Spain).

### **References**

Coll, M., and Hidalgo, M. 2013. Integrating scientific efforts among regional areas of the Atlantic and the Mediterranean towards EBM: the WGCAMEDA initiative. ICES Annual Scientific Meeting. CM 2013/G:05