

12:30 12:45 CLIMATE ENVELOPE MODELS TO PREDICT THE GEOGRAPHICAL DISTRIBUTIONS OF THE ENDEMIC MEDITERRANEAN ICHTHYOFAUNA UNDER CLIMATE WARMING SCENARIOS

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Marine fish communities are changing drastically in response to climate change. This is even more critical in semi-closed areas such as the Mediterranean, a hotspot of endemism. The ability to predict the extension or the contraction of endemic species ranges is therefore highly desirable because they are of primary importance in biodiversity conservation. Climate envelope models have become relevant tools for such an issue: they use the current distributions of species to deduce their climatic requirements. Based on these requirements, future distributions can be predicted under climate changes. In this study, we provide a comparison of different methods for predicting fish geographic distributions in the Mediterranean (multiple regressions, regression trees and learning methods): we (1) model the distributions of the 79 Mediterranean endemic fishes as a function of monthly temperatures, (2) predict the future distributions according to the IPCC scenarios and (3) identify the winner and the loser species according to the gains or the gaps in their predicted distributions. To our knowledge, this is the first study to address the effects of global warming on the endemic Mediterranean ichthyofauna.

12:45 13:00 PREDICTING LARGE SCALE CHANGES IN KELP FOREST - SEA URCHIN DISTRIBUTIONS AND POSSIBLE ECOLOGICAL CONSEQUENCES

Rinde, Eli; Norderhaug, Kjell Magnus; Christie, Hartvig; Bekkby, Trine; Biodiversity and Eutrophication in Marine Environments, Norwegian Institute for Water Research (NIVA), Norway

In temperate and rocky coastal areas, productive and species rich kelp systems have been transformed to low productive and species poor barren grounds at large spatial scales. Along the Norwegian coast, this phenomenon occurs between 64-71° N, where large kelp areas have been transformed to barren grounds for more than 3 decades. Recent investigations indicate a gradual recovery of the barren grounds in the southern area. Utilising detailed spatial data sets in predictive habitat modelling, combined with knowledge of the main physical factors that control the distribution of kelp forests and barren grounds, we have developed probability maps of the distribution of these two distinct stages. Further, by assessing the spatial extent of the two stages of the ecosystem, and the temporal changes in their distribution, we have estimated the associated changes in ecosystem structure and functioning, such as kelp standing stock and primary production. Implications for diversity of benthic plants and animals will also be discussed.

13:00 13:15 CHANGES IN PLANKTON DYNAMICS AND BIODIVERSITY IN THE OLIGOTROPHIC BAY OF CALVI (CORSICA, NORTHWESTERN MEDITERRANEAN): RESPONSE TO CLIMATE CHANGE

Goffart, Anne; Hecq, Jean-Henri, Oceanology, University of Liège, Belgium

The development of the winter-spring phytoplankton bloom is investigated in the Bay of Calvi (Corsica, Ligurian Sea, Northwestern Mediterranean) since 1979. A drastic reduction of phytoplankton biomass is evidenced over the last three decades. Changes in phytoplankton dynamics and biodiversity are discussed in relation to long-term changes in wind stress, NAO conditions and environmental conditions. As a consequence, time-series results enlighten that the entire food web dynamics is affected and that ecosystem resilience is threatened.

13:15 13:30 PATTERNS OF CHANGE AT COMMUNITY LEVEL: TROPHIC SHIFTS AND TAXONOMIC DISTINCTNESS AT SEAGRASS BEDS MACROBENTHIC COMMUNITIES INVADED BY SEAWEEDS

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Invasive seaweeds *Caulerpa racemosa* and *Caulerpa taxifolia* colonise wide areas of *Posidonia oceanica* seagrass beds at the Balearic Islands (Western Mediterranean). Patterns of change in macrobenthic communities are discussed along with trophic shifts at the community level.

Polivalente Auditorium

Session 2.5 Marine bioinvasions and ecosystem functioning