

Recommendations of the meeting of the European Platform for Biodiversity Research Strategy

held under the Portuguese Presidency of the EU

Porto, Portugal, 7th – 9th November 2007

concerning

LIFE ON THE BLUE PLANET:

BIODIVERSITY RESEARCH AND THE NEW EUROPEAN MARINE POLICIES

Having in mind the unique, highly connected, dynamic, large-scale and 3-dimensional nature of marine systems, and the importance of marine ecosystems and their services to human well-being as outlined in the Blue book for an integrated maritime policy for the European Union (COM(2007) 574 final), the participants of the meeting place high priority on research to:

1. Understand status and trends of marine biodiversity and the impacts of drivers and pressures

- map, list and rank marine species and habitat types in terms of vulnerability to human impact, species richness, relevance for ecosystem functioning and uniqueness at appropriate temporal and spatial scales;
- assess threats and impacts of current and future industrial and development activities, marine traffic, alien invasive species, fisheries and aquaculture, and pollution on the structure and functioning of marine ecosystems;
- develop conceptual and modelling capabilities to link biodiversity to ecosystem functioning;
- assess intra-specific variability to identify unique populations and barriers to gene-flow in the marine environment.

2. Develop concepts and tools for the improved management of human activities influencing marine biodiversity

- evaluate the effectiveness and uptake of management options for fisheries and other maritime activities, e.g. technical conservation measures, eco-labelling and ecosystem-based approaches, in mitigating the loss or change of biodiversity;
- assess and where possible improve the effectiveness of Marine Protected Areas (MPAs) as a management tool for biodiversity conservation, including Natura 2000 sites and MPAs in the high seas;
- develop a framework that allows management to be treated as designed experiments, allowing e.g. the re-design of MPAs following proper assessment;
- better understand how to establish adaptive multi-scale governance of marine activities, including issues of access, and policy assessment to achieve integrated management;
- develop valuation methodologies of marine ecosystem goods and services including intrinsic, cultural, economic and social dimensions;
- develop legal and policy options to establish a governance and management system for areas beyond national jurisdiction to facilitate efficient conservation and sustainable use of marine biodiversity.

- 3. Determine and quantify the causes of regional variation in the sensitivity to human activities and global change of marine ecosystems and their functioning.**
 - analyse the interactive effects of multiple global and regional drivers and pressures (e.g., interactions between climatic phenomena and fisheries; ocean acidification and nutrient loads);
 - better understand the implications of climate-induced changes in species range for marine ecosystems and their functioning;
 - better understand the geographical variation in sensitivities and adaptation capabilities of marine species and the consequences for their webs of interactions.
- 4. Improve the capacity to forecast the combined impacts of global change and human activities on the sustainable functioning of marine ecosystems**
 - enhance understanding of the ecological, social and economic implications of uncertainty, non-linearity and tipping points in marine systems;
 - design models to support management of human activities in the marine environment;
 - increase the scientific basis of the ecosystem approach in marine systems.
- 5. Predict and assess the impacts on marine biodiversity of climate change adaptation and mitigation measures**
 - determine the consequences of adaptation and mitigation measures (managed retreat, coastal defences, wind farms, tidal and wave projects) on marine biodiversity (e.g. noise and electromagnetic pollution, alteration of habitat, facilitating spread of species) and their impacts on ecosystem functioning and goods and services;
 - understand the cumulative effects of local interventions on large scale ecosystem processes (e.g. coastal defences and Offshore Renewable Energy Devices);
 - understand and value environmental, social and economic benefits and costs and wider consequences at different spatial and temporal scales of adaptation and mitigation measures.
- 6. Improve understanding of how marine biodiversity contributes to mitigation of and adaptation to climate change**
 - quantify the effects of ecosystem degradation and recovery on carbon cycling and storage;
 - investigate the benefits of protection, restoration and recovery of marine ecosystems (e.g. biogenic reefs, coastal and marine vegetation and oceanic food-webs) as mitigation and adaptation measures;
 - identify and develop novel opportunities to use marine biodiversity sustainably for mitigation and adaptation of climate change, such as the use of algae to produce bio-fuels;
 - assess the environmental risks of biotechnological innovations.

For these research priorities to deliver effective policy relevant results, particular attention should be paid to:

- foster long-term inter-disciplinary research, funded on a pan-European scale, including sustained observations and experiments at multiple scales;
- secure taxonomic expertise on marine organisms and foster capacity to deliver appropriate information in support of ecological work;
- develop mechanisms to better incorporate key actors and stakeholders in the discussions about marine biodiversity conservation;

- enhance communication and dissemination of biodiversity research results and increasing awareness of scientists on policy and governance issues;
- maximize the value and accessibility of existing data and meta-data including archives and the interoperability of existing data bases;
- encourage the development and continuity of national and regional networks that can then be linked to form European and international networks.

The participants of the meeting agreed that, as a consequence of high connectivity of marine ecosystems, technological interventions should be governed by the precautionary approach and complemented by appropriate protective measures. This implies substantial research to ensure that marine ecosystem and biodiversity effects are well understood and their environmental consequences and social acceptance are taken into account in decision making.