

Biodiversity assessment and management of ecosystems from the coastal zone to the high seas and deep sea

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Human pressures now extend to the high seas and deep oceans which are hosting the least explored areas on the planet assumed to be the largest reservoirs of biodiversity and mineral resources. Global changes and environmental impacts affect all marine organisms from phytoplankton to higher marine vertebrates and all oceanic processes. There is an urgent need to adopt new approaches, integrated, ecosystemic in content and precautionary and anticipatory in ambit, for management and development at global levels, a tridimensional marine spatial management not only for seabed mining, but for fisheries management, waste disposal, carbon sequestration and other human activities.

In order to define the proper reference areas and monitoring system, the methodology for the ecosystem-based management of deep sea areas focuses on different types of activities and support decision-making processes by managers. This methodology is based on knowledge of bio-physical aspects, the selection of a set of ecological indicators and the use of classical and innovative tools, including modeling (including eco-hydrodynamics) and predictive scenarios. It bridges the gap between detailed/quantitative and qualitative assessments of marine systems and management requirements. Environmental assessment and habitat mapping is needed to provide research and resource managers with the state over time and space of natural resources and habitats in order to adapt specific measures, regulations and practices to preserve the environment and minimize impacts of anthropic activities.