

TITLE: Bridging the Gap between Policy and Science in Assessing the Health Status of Marine Ecosystems

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ABSTRACT:

Human activities, both established and emerging, increasingly affect the provision of marine ecosystem services that deliver societal and economic benefits. Monitoring the status of marine ecosystems and determining how human activities change their capacity to sustain benefits for society requires an evidence-based Integrated Ecosystem Assessment approach that incorporates knowledge of ecosystem functioning and services). Although there are diverse methods to assess the status of individual ecosystem components, none assesses the health of marine ecosystems holistically, integrating information from multiple ecosystem components. Similarly, while acknowledging the availability of several methods to measure single pressures and assess their impacts, evaluation of cumulative effects of multiple pressures remains scarce. Therefore, an integrative assessment requires us to first understand the response of marine ecosystems to human activities and their pressures and then develop innovative, cost-effective monitoring tools that enable collection of data to assess the health status of large marine areas. Conceptually, combining this knowledge of effective monitoring methods with cost-benefit analyses will help identify appropriate management measures to improve environmental status economically and efficiently. The European project DEVOTES (DEVELOPMENT Of innovative Tools for understanding marine biodiversity and assessing good Environmental Status) specifically addressed these topics in order to support policy makers and managers in implementing the European Marine Strategy Framework Directive. Here, we synthesize our main innovative findings, placing these within the context of recent wider research, and identifying gaps and the major future challenges.

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