

Ecosystem status and indicators: a challenging exercise!

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To limit the degradation of aquatic ecosystems, two EU directives are implemented by all member states, namely the Water Framework Directive (WFD) & Marine Strategy Framework Directive (MSFD). The main policy goals of both directives are to ensure that human activities are performed in a sustainable way and to reach a good status of the marine ecosystem. Most scientists are nowadays confronted with this 'status' aspect in their research. Therefore, indicators are the scientific response to the governmental need for reliable and accurate information on a system's conditions. The final aim of these indicators is to distinguish with sufficient precision between healthy and degraded water systems, and — by means of science-based thresholds — to identify the critical border between the 'need for action' vs. 'no action' to improve the ecosystem status. Due to the complexity of aquatic ecosystems, several indicators with complementary properties are needed to effectively support the decision-making process (Van Hoey *et al.*, 2010).

However, the delineation of an appropriate set of indicators still remains a major challenge. As both WFD and MSFD follow different strategies, EU member states are defining separate sets of indicators for either directive. Major discrepancies between directives and member states are related to: (1) differences in available research experience (e.g. data availability) between member states, (2) lack of a common implementation strategy (e.g. a wide variety of indicator types for the same ecosystem component), (3) the degree of risk and uncertainty that each authority is prepared to accept, and (4) the interpretation of the term 'good status'.

The WFD strategy allows each member state to define its own set of indicators, and adheres to multiple intercalibration exercises to evaluate the compatibility between the different indicators. The intercalibration for the North East Atlantic region (NEA) is currently in its 3rd phase (JPI oceans pilot action) and shows that, for example, an intercalibration for the 10 different benthic indicators in coastal waters is feasible, although it was a long-winded work. On the other hand, the MSFD strategy strives towards common indicators on a regional scale instead of intercalibrating the proposed ones. This development process is carried out by a variety of EC, OSPAR and ICES working groups, none of them with real 'political' power to take decisions on the implementation at EU (or regional) scale, which leads to even more pronounced discrepancies compared to the WFD process. For example, a comparison of indicator approaches for soft sediments within MSFD in the NEA region proved to be chaotic, with no link to the WFD indicators, full of vague approaches, and struggling with varying ambitions of the different authorities.

There is still a long way to go, yet both WFD and MSFD processes already largely increased our knowledge on the application of indicators in marine management, which leads us slowly in the right direction of a common assessment of the ecosystem status by means of a widely accepted and appropriate set of indicators.

References

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