A multi-indicators approach to better characterise littoral pelagic biodiversity

GOBERVILLE Eric[1,2], RICHIRT Julien[3], SAUTOUR Benoît[3]

[1]*CNRS, Univ. Lille, Univ. Littoral Côte d'Opale, UMR 8187, LOG, Laboratoire d'Océanologie et de Géosciences, F 62 930 Wimereux, France*

[2]*Sir Alister Hardy Foundation for Ocean Science (SAHFOS), The Laboratory, Citadel Hill, Plymouth PL1 2PB, United Kingdom*

[3]*CNRS, Univ. Bordeaux 1, UMR 5805, EPOC, Environnements et Paléoenvironnements Océaniques et Continentaux, Station marine d'Arcachon, F 33 120 Arcachon, France*

Monitoring is essential to improve our knowledge of the state of marine biodiversity. To compile monitoring data across large numbers of species and to summarise the structure and functioning of ecosystems, scientists and policymakers rely on indicators to estimate biodiversity patterns and to evaluate the potential consequences of biodiversity changes. This task may prove complicated however, as many indicators exist and no individual metric undoubtedly emerges as the best overall. Comparative studies to estimate the effectiveness of diversity indicators, as well as the use of multiple indicators strategies should therefore be urged to adequately capture the complexity of any marine and coastal ecosystem. Here, using data from the Service d'Observation en Milieu LITtoral (SOMLIT) from 1998 onwards, we examined year-to-year changes in copepod communities in two littoral ecosystems of Western Europe (i.e. Arcachon and the Gironde estuary). We then investigated the effectiveness of 13 biodiversity indicators for translating monitoring data into summary metrics by testing their ability to reproduce ecosystem variability. For both sites, a synchronous change in copepods communities was detected *circa* 2005 using not only observation data but indicators as well. However, because we also demonstrated that the response and the effectiveness of indicators may vary between sites, our results stress the importance of considering a large panel of indicators in diversity studies to better characterise the state of littoral pelagic ecosystems. Such an approach appears crucial to find efficient ways to evaluate marine ecosystem health and to take appropriate management and conservation actions.

Keywords: zooplankton, copepods, indicators, coastal/littoral ecosystems, long-term changes

Contact author: Eric GOBERVILLE, *LOG/SAHFOS, eric.goberville@univ-lille1.fr*