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## The Integrated Assessment as the main goal for achieving an Ecosystem Approach to Management in the Western European Shelf Seas

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### Summary

The Working Group on Ecosystem Assessment of Western European Shelf Seas (WGEAWESS), as a regional ICES group, aims to develop methods and tools for an Integrated Ecosystem Assessment of the eco-regions involved since 2011. These ecoregions correspond in this case to the Western European Shelf Seas, involving different Member States such as Ireland, UK, France, Spain and Portugal and covering the region from the Celtic Sea to the Gulf of Cadiz.

### Introduction

Providing regional integrated ecosystem assessments (IEA) is a key challenge identified in the ICES Strategic Plan (2014-2018). IEAs are seen as a fundamental link between advice and ecosystem science in achieving Ecosystem Based Management (EBM). While EBM is not a new concept, difficulties in achieving such an ambitious goal have been highlighted by the extensive work conducted in this area. The implementation of new regulation policies, such as the Marine Strategy Framework Directive (MSFD) and the reformed Common Fisheries Policy (CFP) in Europe, have challenged the scientific community to rapidly react despite these difficulties and provide scientific advice to support management decisions concerning these policies.

Regional ICES groups have been tasked with developing methods and tools for IEA in their corresponding ecoregions; this is the case of the Working Group on Ecosystem Assessment of Western European Shelf Seas (WGEAWESS). The role of this group is to implement, and test tools and methods for the advisory process, focusing on the North Atlantic European continental shelf, including Celtic Seas, Bay of Biscay and Iberian Waters.

### Materials and Methods

Different Terms of Reference (ToRs) have been established by the group to achieve the main goal of assessing the involved eco-regions in an integrative manner, establishing the ecosystem based management as the basis of this group: a) metadata compilation for ODEMM analysis (see Koss *et al.* (2011) and ICES (2013) for ODEMM linkage framework); b) preliminary evaluation of data and trends; c) ecosystem overviews; d) identify ecosystem trends and linkages.

And different methods are being used to answer to each of these ToRs above. Some examples can be found in the next section of this abstract. The final ecosystem overview of this region will also be available soon (see ICES (2013) for the preliminary ones).

### Results and Discussion

Some preliminary results of a first IEA exercise will also be shown with emphasis on the MSFD descriptors D1 (biological diversity) and D4 (food webs) (see Figures 1 and 2). A preliminary trend analysis (ToR b) has been also carried out in the Gulf of Cadiz (GoC; Figure 3).

a) D1 – biological diversity

b) D4 – food webs

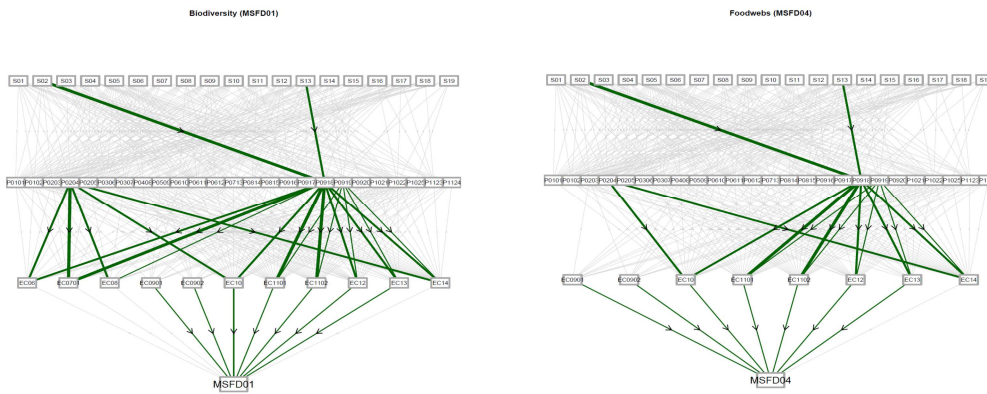


Figure 1. ODEMM linkage framework modified by the WGEAWESS to respond to ToR illustrating the main linkages with available data (bold/green links) as compared to the whole possible linkages diagram (light grey links) between MSFD descriptors and three considered components levels (ICES, 2013): human activity sector (S), pressure category (P) and ecosystem component (EC). The first plot (figure 1a) refers to D1 (biodiversity) and the second one (figure 1b) to D4 (food webs).

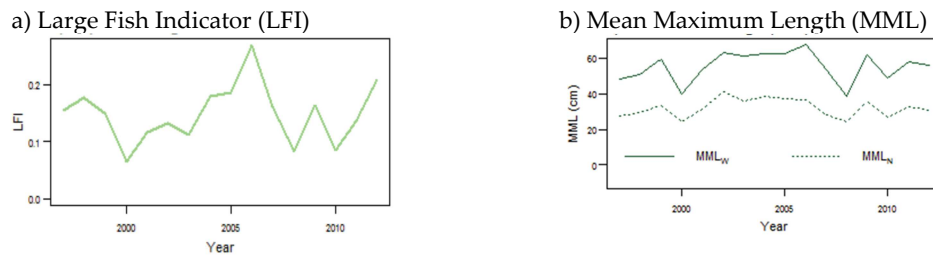


Figure 2. a) Large Fish Indicator and b) Mean Maximum Length trends in the Celtic Sea as an example of results from ToR d.



Figure 3. Traffic light plot showing the development of the demersal component, some environmental variables and fishing pressure over the last 18 years in the Gulf of Cadiz (see more details in ICES (2013)).

The potential of the present approach to gather and integrate the existing knowledge of a given ecosystem and produce an overall assessment of the ecoregion has been shown in this work.

## References

Koss, R.S., Knights, A.M., Eriksson, A., Robinson, L.A. 2011. ODEMM Linkage Framework Userguide. ODEMM Guidance Document Series No.1. EC FP7 project (244273) 'Options for Delivering Ecosystem-based Marine Management'. University of Liverpool, ISBN:978-0-906370-66-7.

ICES, 2013. Report of the Working Group on Ecosystem Assessment of Western European Shelf Seas (WGEAWESS), 11–15 February 2013, Lisbon, Portugal. ICES CM 2013/SSGRSP:02. 159 pp.