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The importance of Marine Spatial Planning and high resolution mapping for deep-water areas: A case study from the southwest of Ireland's Exclusive Economic Zone

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Marine Spatial Planning (MSP) following an ecosystem-based approach has been widely adopted globally to manage the conflict between human activities and the ability of the oceans to supply ecosystem-based services. While no area of the oceans has avoided human influence, it is coastal ecosystems that have experienced the greatest cumulative impacts and are consequently the main focus of concern [1]. Nonetheless, the deep-waters of the North-East Atlantic have been found to have had medium to high impact by human activities, whose reach extends ever deeper as technology advances. In addition, deeper ocean areas may be more sensitive to human impacts than previously thought [2].

Ireland's Exclusive Economic Zone (EEZ) deeper than 200m extends over an area of 435,000 km^2 and ranges down to 4000m water depth. The Irish National Seabed Survey, managed by the Geological Survey of Ireland and the Marine Institute, completed mapping of Ireland's deep-water area in 2003 [3]. This data is now being re-examined, together with sub-bottom information, in the context of seabed and geomorphological mapping for submission to the European Marine Observation and Data Network (EMODnet) in addition to marine-spatial planning (MSP). Data from Ireland's southwest EEZ, at the gateway to the densely populated Europe continent (Fig. 1) highlights the need for spatial planning in deep-water areas. Bottom-trawling has been identified as the most potent impact in this area, but proposed Oil and Gas exploration, significant shipping volumes and the more widespread threats posed by ocean heating and acidification are also considerations [2,4]. Re-examination of bathymetric and sub-bottom data has identified possible ecosystem conflicts, for example, deep-water trawling around canyon heads and threats to poorly documented provinces of upper-slope, cold-water coral mounds. This has been made possible by production of targeted, higher-resolution mapping of potentially sensitive areas.

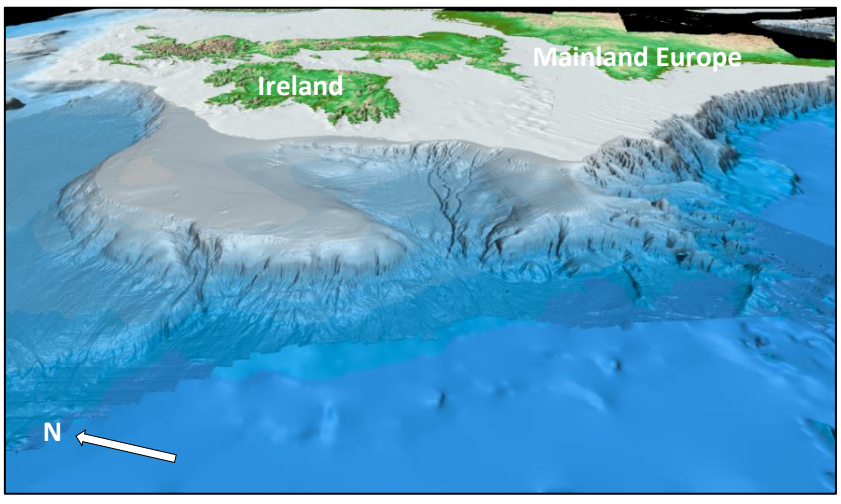

Figure 1: Ireland's southwest EEZ, the Atlantic gateway to mainland Europe

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