



LIFE MAPPER

MAPPING, PROTECTING, AND RESTORING MARINE ECOSYSTEMS



**LIFE
MAPPER**

MAPPING, PROTECTING, AND RESTORING MARINE ECOSYSTEMS

LIFE24-PRE-IT-LIFE-MAPPER

Guidelines for **MAP**ping, **ProtE**cting, and **Rest**oring Marine Ecosystems

Milestone	1 – LIFE MAPPER Geoportal
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Executive Summary

The LIFE MAPPER Geoportal milestone marks a key achievement in establishing an integrated, user-oriented platform for habitat mapping and monitoring across multiple spatial scales. Led by National Research Council of Italy (CNR) within the coordination of WP1 and the technical leadership of WP2, the Geoportal supports both the assessment of the current state of habitat mapping and the identification of knowledge gaps, while also contributing to technology evaluation and cost estimation activities. The platform enables continuous tracking of mapped habitats and restoration areas, serving as a central component of the LIFE Mapper Knowledge Platform. It integrates interoperable OGC-compliant services, including Web Mapping Services (WMS) and Web Feature Services (WFS), sourced from established European and international initiatives such as EMODnet, European Maritime Spatial Planning Platform, HELCOM, and the NBFC Geoportal. Designed in compliance with the INSPIRE Directive, the Geoportal ensures harmonised data integration and accessibility, offering intuitive tools for visualisation, querying, and metadata exploration. By federating existing resources and linking to complementary European and national platforms, the LIFE MAPPER Geoportal significantly enhances data availability, interoperability, and decision-support capacity for habitat restoration and environmental management.



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1 Introduction

The document is part of WP2 - *Habitat mapping and ecological condition assessments*, in particular, it fits in the Task 2.1 - *Habitat mapping state of play and knowledge gaps*. The Milestone 1 refers to the implementation of the LIFE MAPPER Geoportal that is a sharing point where Member States (MS) can visualize and access data about habitat extents, habitat status, and restoration areas with reference to the Nature Restoration Regulation (NRR). This output also includes the publication of web services for the integration of the results in other platforms and the metadata population.

2 Technical information

The LIFE MAPPER Geoportal, implemented by CNR-ISMAR, is part of a Marine Spatial Data Infrastructure (MSDI) comprising four main components: 1) a WebGIS, 2) a Geodatabase, 3) a metadata catalogue and 4) Web Map Services (WMS).

Data collected by LIFE MAPPER from different sources across the European Seas are homogenized according to a specific data models following the INSPIRE guidelines. Data are stored in a Relational Database Management Systems (RDBMS) based on an Oracle spatial database, and managed through ArcSDE (Spatial Database Engine) and ArcGIS desktop (© Esri). The layers with a specific appearance (e.g. symbologies, scales, labels) are catalogued in cartographies, themes, legends, groups and tables using the Moka Content Management System (CMS) (© Semenda srl), and organized in thematic web applications published by ArcGIS Server (© Esri). The Geoportal displays the web applications in a GIS environment reachable via browser. All layers are described in a GeoNetwork metadata catalogue using the standard ISO19115 and ISO19139 for geospatial information (vector data, raster data, and web services), and are available as Open Geospatial Consortium (OGC) web services (Web Map Services).

3 The Geoportal

The LIFE MAPPER Geoportal is reachable through the project's website and integrated in the LIFE MAPPER Knowledge Platform: <https://www.life-mapper.eu/>

It is a web-based portal for interactive visualization of the spatial data collected during the Project in the European Seas organized in a common spatial infrastructure. The portal combines Geographic Information Science (GIS) principles and tools harmonizing intelligent web maps with graphs, charts, tables, and text, to unlock, make accessible and re-usable the data for partners, researchers and stakeholders in a coordinated manner. The Geoportal allows the user to visualize and query data. The user can navigate through the layers, customize your view (for example adding external data), print maps, etc.

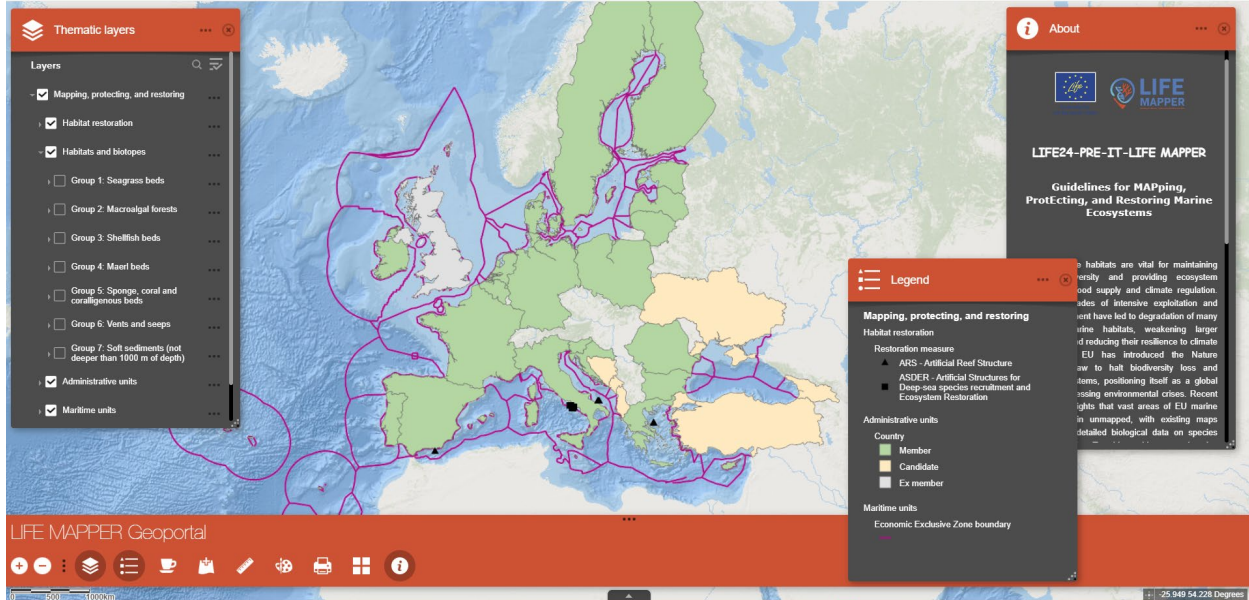


Figure 1 LIFE MAPPER Geoportals.

The LIFE MAPPER Geoportals consists of a main window showing a basemap with layers and a toolbar with the functions to move around the map: *zoom in*, *zoom out*, *Table of Contents (TOC)*, *legend*, *add data* from shapefile, web services or catalogue, *measure*, *draw*, *print*, *basemaps gallery*, and *info*. In the lower left corner, the *scale bar*, and in the lower right corner, the *coordinates* following the cursor on the map. The LIFE MAPPER Geoportals offers a rich set of interactive tools designed to support advanced visualisation, exploration, and analysis of habitat-related spatial data within an intuitive web-based GIS environment. Users can manage and organise datasets through a dynamic TOC, where layers and layer groups can be activated, reordered, filtered, and customised (e.g. transparency), while direct access to metadata and downloadable content ensures full data transparency. The *Identify* tool enables detailed inspection of spatial features by retrieving associated attributes, which can also be explored in depth through interactive *attribute tables* supporting filtering, querying, selection, and export functionalities. Visual interpretation is enhanced by the legend and basemap gallery, while analytical capabilities are strengthened through tools such as measure functions for calculating distances, areas, and coordinates. The Geoportals also allows high flexibility in data integration, enabling users to add external OGC-compliant services or upload local datasets for temporary visualisation without duplicating data. Additional tools, including drawing utilities for annotating maps and advanced print options for exporting customised map layouts, further support user interaction and reporting. Together, these functionalities create a powerful and interoperable platform that facilitates comprehensive data exploration, comparison, and decision-making in habitat mapping and ecological assessment contexts.