

• Marine Natural Capital at Different Scales:

• Marine Ecosystem Services Signal Box

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PML

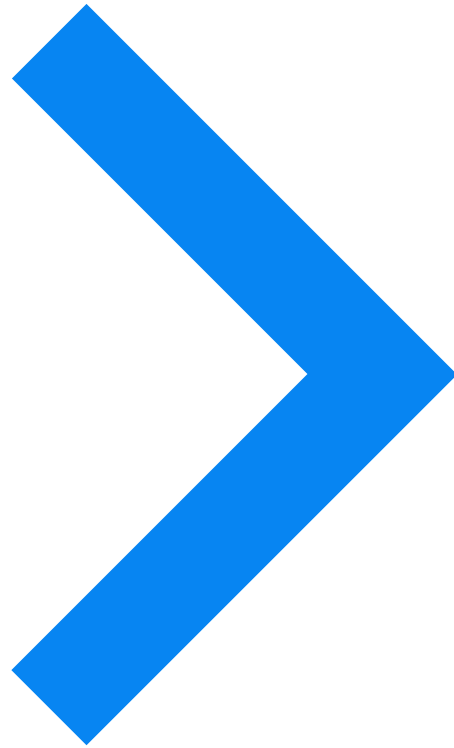
Plymouth Marine
Laboratory



Contents

- Purpose of the Marine Ecosystem Signal Box
- Profiling Tool Description and User Guide
- Search Tool Description and User Guide
- Testing and Next Stage Development
- Summary





Statement of the Problem

Statement of the Problem:

- The intention of the overall project is to develop guidance for marine natural capital assessments at different scales in tandem with identifying or developing Geographical Information System (GIS) data layers to support analysis and presentation of results.
- In recent times, a number of data portals have been rolled out from Government to present, share and analyse data. These include:
 - Explore Marine Plans: developed by the Marine Management Organisation, this includes a significant number of data layers (>30) which relate to organisational boundaries.
 - The Crown Estate Marine Data Portal: including all seabed related infrastructure including oil & gas installations, offshore wind farms and aggregate extraction.
 - DEFRA Magic Map: although primarily terrestrial, Magic Map includes a number of layers that relate to marine habitats and species..
 - MEDIN (Marine Information and Data Network) and specifically DASSH (Archive for Marine Species and Data) includes the archive for marine species surveys, the data from which can be used as indicators of habitat condition.

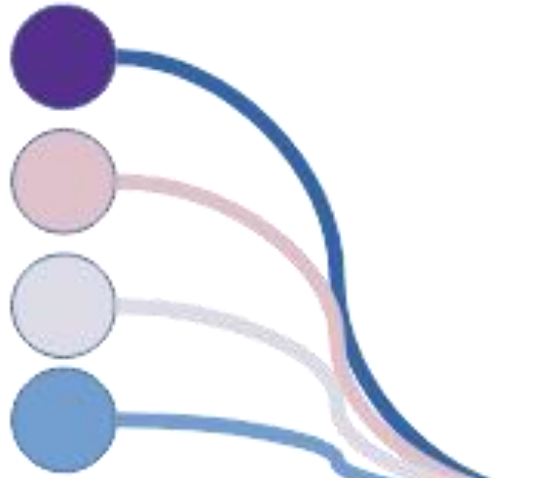
Proposed Approach

- This project does not seek to replicate these portals. Instead, it seeks to signpost where information not limited to GIS layers, but including research papers and publications, software tools, case studies may be useful to inform a marine natural capital assessment.
- Consequently, a simple tool has been developed to capture data sources which contain relevant information such that users can be directed towards relevant sources to meet the needs of the scope and depth of any analysis.
- The tool consists of two key elements:
 1. The source capture and profiling interface that allows an individual to capture a data or information source in the portal.
 2. The search interface that allows an individual to identify data and information that might support them to undertake a natural capital assessment.

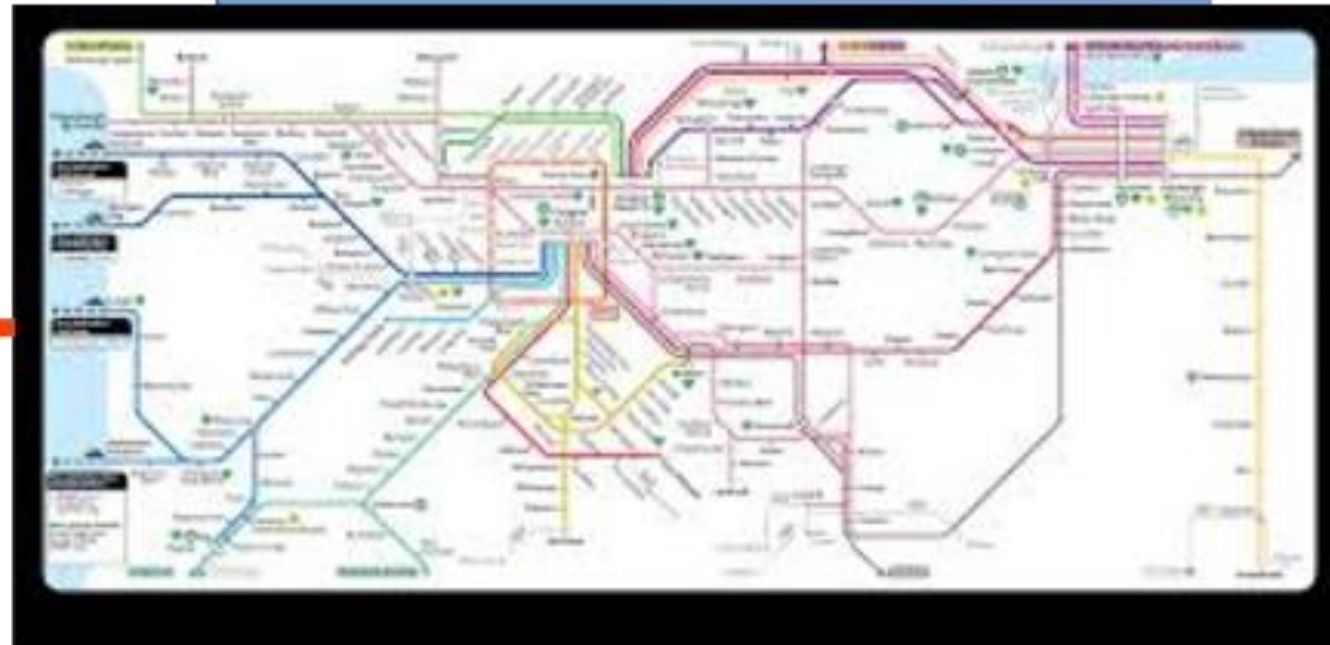
Marine Ecosystem Signal Box

highlighting routes through a complex network

Human Activities & Pressures



Site Context



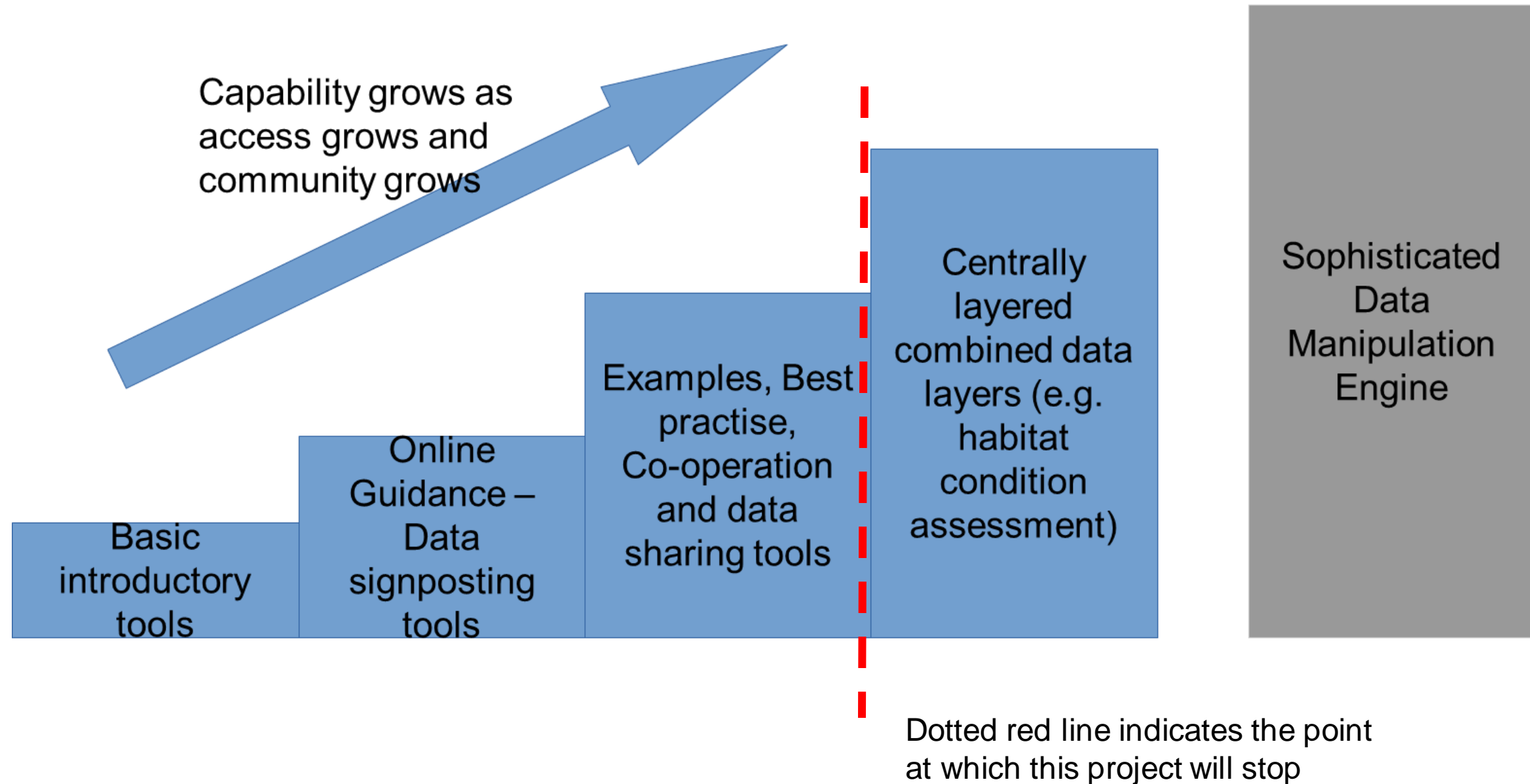
mNC Assets –
Habitats,
Species &
Condition

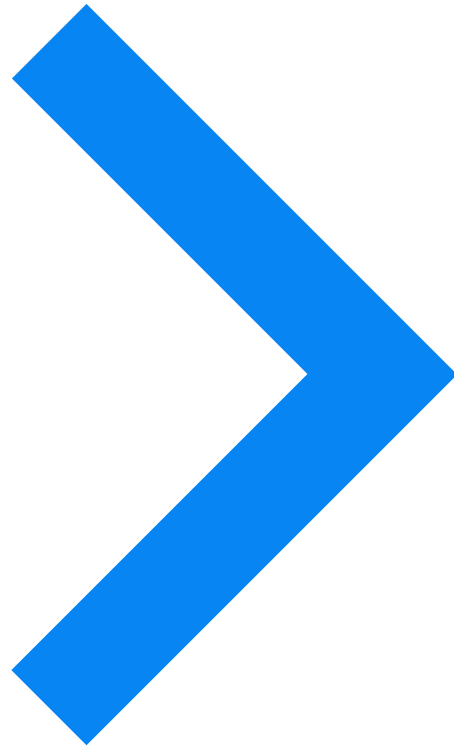


Ecosystem
Services &
NC Valuation



Marine NC Capability Staircase





Description of the data capture and profiling tool

Data Capture and Profiling User Interface

The screenshot shows a web application interface for 'Natural Capital'. On the left is a dark navigation sidebar with the word 'NAVIGATION' at the top. The main content area features a 'Resource Profile' form. The form has a blue header and a white body. It includes a set of tabs: 'Details' (selected), 'Classification', 'Frameworks', 'Spatial', 'Temporal', 'Confidence', and 'Complexity'. Below the tabs are three input fields: 'Headline/Title', 'Description', and 'Resource type'. The 'Resource type' field contains two radio buttons: 'Link to website' and 'Upload'. At the bottom right of the form are four buttons: 'Clear' (orange), 'Previous' (light blue), 'Next' (medium blue), and 'Submit' (green).

Profiling tool instructions

- To profile a data or information source, the following fields need to be completed:
 - First Tab:
 - Provide the source with a title
 - A short description of the benefits and scope of the source. This may also indicate any limitations which could impinge on the usefulness or accuracy of the source
 - Either a link to an existing URL (i.e. web page, download link), or a facility to upload the data source to the tool
 - Subsequent Tabs:
 - Classification of source: best descriptor of tool, e.g., GIS layer, research paper, software tool, publication, ...
 - Frameworks: identify where the data source can be used in the Natural Capital framework, e.g. policy, site context, ecosystem services, natural capital assets including habitats, species, and condition as well as human activity and consequential pressures. Depending on selection, more refined options can be added where applicable.
 - Spatial scale: does the source apply globally, nationally, regionally or at a point source
 - Temporal: if the data is time sensitive, what type of data source is it – slow moving (becomes outdated in timescales of decades or more), snapshot at a point in time (e.g. a biological survey) or realtime (constantly being updated), or static if it is not time sensitive)
 - Confidence: High, Medium, Low or Not known. Medium and low confidence may only be available for some studies and this needs to be recognised. Government sources, Academia and peer reviewed documents should all be considered high confidence data sources.
 - Complexity: Introductory, Intermediate and Advanced – provide an indication of subject depth to guide whether it is appropriate to the use and application of the source.
 - When satisfied, press submit in the lower right hand box. A pop up should display to indicate that submission was successful



Access to the Profiling Tool

The profiling tool can be accessed at the following URL:

[Marine NC Profiling Tool](#)

To create an excel file of the content of the database:

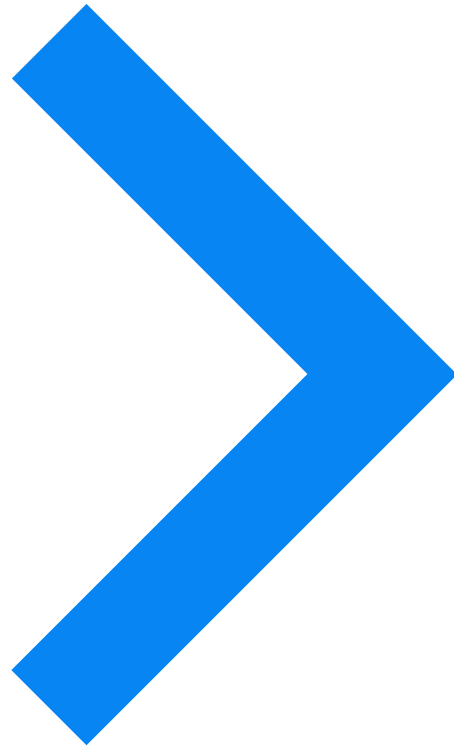
[Generate MS excel bulk download](#)

And then go to:

[Download MS excel file](#)

Any questions, support or help, please email: support@avsdev.uk





Description of the search tool

Search Tool User Interface

Resource Filters

Use the following options refine your search.

Frameworks +

Classification +

Spatial +

Temporal +

Confidence +

Complexity +

Search

Search Results

Show 10 entries

Resource	Classification	Frameworks
<p>Explore Marine Plans <i>MMO's website provides an overview of human activity including shipping, rec...</i> Show more</p> <p>https://explore-marine-plans.marineservices.org.uk/</p>	<ul style="list-style-type: none"> • GIS Layer 	<ul style="list-style-type: none"> • Ecosystem Service • Habitat • Human Activity • Species
<p>DEFRA LIDAR analysis Digital Terrain Model <i>A set of Geo TIFF files for analysing low lying land susceptible to coastal floodin...</i> Show more</p> <p>https://environment.data.gov.uk/survey</p>	<ul style="list-style-type: none"> • GIS Layer 	<ul style="list-style-type: none"> • Ecosystem Service <ul style="list-style-type: none"> ◦ Regulation of environment • Habitat
<p>Slipways and boat launches <i>GIS layer showing the location of slipways and boat launches.</i> http://www.boatlaunch.co.uk/</p>	<ul style="list-style-type: none"> • GIS Layer 	<ul style="list-style-type: none"> • Ecosystem Service <ul style="list-style-type: none"> ◦ Recreation <ul style="list-style-type: none"> ▪ Recreation/tourism • Human Activity <ul style="list-style-type: none"> ◦ Recreation <ul style="list-style-type: none"> ▪ Non-motorised land craft ▪ Non-motorised water craft ▪ Powerboating or sailing with an engine: Launching and recovery, participation ▪ Powerboating or sailing with an engine: Mooring and/or anchoring ▪ Sailing without an engine: Launching and recovery, participation
<p>The Crown Estate <i>Crown Estate manages the seabed and nationally owned sections of the coas...</i> Show more</p>	<ul style="list-style-type: none"> • GIS Layer 	<ul style="list-style-type: none"> • Human Activity <ul style="list-style-type: none"> ◦ Energy Production ◦ Resource Extraction

Search tool instructions and method

- To search for a source, a suitable subset of the following fields need to be completed (i.e. none are mandatory)
 - Framework: whether the user is interested in policy, ecosystem services, human pressures, etc. Further refinement becomes visible as the user drills into the options
 - Classification: identifies the type of product the user is interested in (e.g. GIS layer, research paper, etc)
 - Spatial needs: identifies the preferred accuracy (lowest level is nearest to a point in space), increasing accuracy to regional data and ultimately global coverage.
 - Complexity: is whether the user is interested in introductory, intermediate or advanced data sources.
- The search tool is using a 'k-Nearest Neighbour' search weighting algorithm which calculates the shortest 'euclidian distance' between the search terms defined above and the database to find the closest matches.
- In this version there is no weighting applied to the relative weighting and therefore some returns may be counter-intuitive. It is proposed that these weightings are tuned during the case study phase (see next steps)
- The confidence and temporal classifications are included in this version but are likely to be dropped once further testing of weighting has completed.

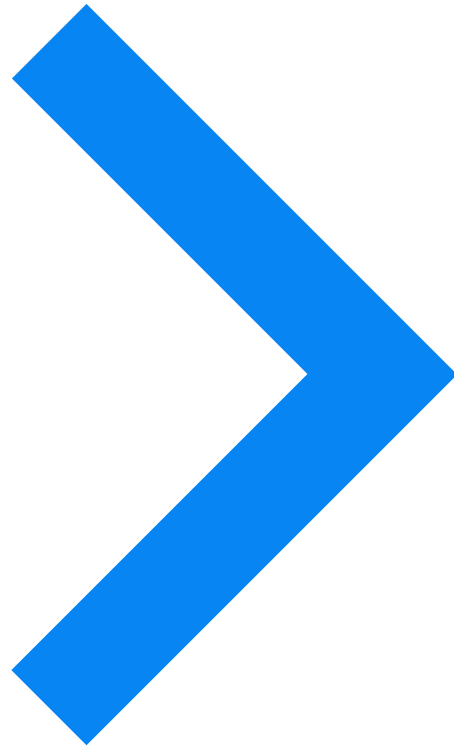
Access to the Search Tool

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[NC search tool](#)

Any questions, support or help, please email: support@avsdev.uk





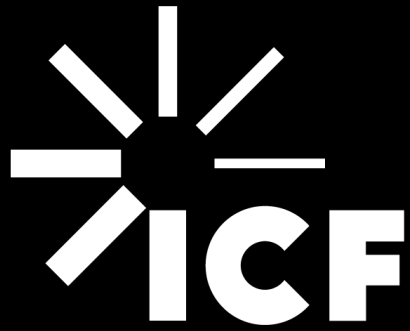
Next steps for the development of guidance for marine NC assessments



Next Steps to be conducted in the next period (i.e. upto March 2024)

- Review the profiling keyword structures:
 - Keyword structures have been taken from JNCC and Natural England sources. However, the structure needs review to ensure that it is useable for both novice and more experienced analysts.
 - Habitats are described in accordance with EUNIS classification, but this may not be intuitive to staff not familiar with marine classification systems
 - Species are described in accordance with the Universal Asset Matrix, however this tends to concentrate on charismatic species and therefore the role of species in regulation services and food web may be overlooked
- Use hand in hand with the case studies
 - The suitability of profiling (and ability to access) needs more testing. During our system testing, a number of websites proved inaccessible for various technical reasons and any more errors (or system crash) need to be trapped and caught in the tool.
 - Search term weighting and structuring of introductory, intermediate and advanced can be tuned to avoid information overload
- Consider how briefing products can be generated and described
 - Processes required for the generation of useful products for the case studies (e.g. graphs, maps, graphics) should be captured, The form these take (e.g. scripts, graphics sources or method) can be captured and profiled within the tool.





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