



1. Requirement overview:

Requirements	To provide dynamic modelled maps of fish spawning, nursery, migration and feeding areas to support marine planning, conservation and licensing decisions.
Requirement detail	<p>MMO requires information on essential fish habitats to support marine management, including marine planning and licensing decision making. Evidence could also be used to inform management of habitats within marine protected areas.</p> <p>In 2013 a model was developed for MMO using the best available evidence. Information on spawning and nursery areas exists for a number of fish species, however there are gaps for some species and some geographic locations. Whilst marine plan development and licensing applications provides some knowledge on particular fish stocks information is lacking on some locations and fish.</p> <p>An update to the model is required and should incorporate the latest data, and have the support of stakeholders to ensure its relevance and effectiveness. It should become dynamic so that as more data becomes available the model can be updated.</p>
MMO use	<p>Marine planning: Provide supporting maps for marine plans and evidence for developing explicit policies that protect essential fish habitats for environmental, social and economic outcomes.</p> <p>Marine licensing: Inform assessments of marine development applications with supporting evidence on fish species, habitats and fish assemblages.</p> <p>Marine conservation: Support management of important habitats within marine protected areas by improving the information on the location and characteristics of essential fish habitats.</p>
External interest	Cefas, Natural England
Delivery target	Q2 2018

2. Aims and objectives

Aim:

To update and operationalise the model prepared for the MMO, which spatially locates essential fish habitats in English marine plan areas, with a high degree of confidence and resolution.

Objectives:

- recommend minimum confidence thresholds for model use in prescriptive or spatially explicit marine plan policy development/ marine licensing decision making
- improve the resolution of the essential fish habitat model to at least the minimum confidence threshold agreed during aim number 1
- present the model outputs for public use via the [Marine Information System](#) (MIS), MMO's marine planning spatial support tool for the public and authorities

3. Existing evidence

MMO	<p>MMO1044 The aim of the project was to improve the spatial resolution of data on essential fish habitats for key fish species (both of commercial and ecological relevance) in the south marine plan areas, and to assess the relative value of these fish habitats to the regional commercial fisheries productivity and the ecosystem function.</p> <p>MMO1096 This project aimed to build upon the results of MMO1044. In particular, this project used stakeholder input to help validate the models generated in the previous project and improve confidence in them.</p>
Academic	<p>There are a large number of academic papers on the topic of individual species and their essential fish habitats and also the effective use of predictive models (Guisan et al 2002). These have informed the MMO projects to date. In the USA where management of essential fish habitats is supported by law there has been a number of papers produced that explore the evidence requirements for managing them such as:</p> <p>Ecosystem approaches to fishery management through essential fish habitats (Rosenberg et al. 2000)</p>
Other	<p>Cefas have produced a large amount of work on essential fish habitats in English waters and regularly update the information following surveys. https://www.cefas.co.uk/publications/techrep/TechRep147.pdf</p> <p>The Environment Agency has surveyed English Estuaries and coastal waters for a period of ten years to support Water Framework Directive monitoring. A large multi-partner EU project called CHARM mapped part of the English channel's essential fish habitats.</p> <p>In the USA a dynamic essential fish habitat internet map tool is used to keep information public, accessible and updateable http://www.habitat.noaa.gov/protection/efh/efhmapper/</p>

4. Current activity

MMO are not currently engaged in any activity related to this evidence requirement.

5. Associated evidence requirements

Ref	Title
R004	Biodiversity 'hotspots' in the English marine plan areas
R005	Marine species migration pathways
R031	Improved knowledge of ecosystem services
R023	The distribution and condition of major non-protected mammal, bird and fish species
R110	Temporal variability of marine habitats

More information on these is available [here](#)

6. Potential delivery route

The MMO will look to partner with organisations of relevance to widen the potential impact of any work undertaken in this area. The MMO will also explore opportunities to influence the research of others. Knowledge exchange is required throughout the duration of this requirement and not limited to when delivery is complete.

Commissioning

Initially a piece of commissioned work may be required to complete the programme of model development and agreement begun by the previous two MMO evidence projects. All MMO commissioning is carried out via Defra's commissioning system.

Knowledge exchange/partnering

MMO is aware that new information on essential fish habitats is being generated and would like to engage with data collectors to collaborate on inputting this information to the model. MMO is also aware that bespoke predictive models for some parts of English seas are being developed and will engage with partner agencies to support development of and use of this information.

Influencing the research of others

Where appropriate the MMO will work with researchers to support the development of information on essential fish habitats that will augment the evidence base and provide MMO with improved information for decision making related to this topic.

See table 1 for timescales.

7. Contact

For more information or to add further research to the existing evidence list please email evidence@marinemanagement.org.uk

