Marine Management Organisation

Evidence requirement R088:

Spatial identification and categorisation of areas of particular importance to fish populations

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	MMO requires information on essential fish habitats to support marine management. Information on spawning and nursery areas exists for a number of fish species, however there are gaps for some species and some geographic locations. This has been highlighted by the development of marine plans at a regional scale for English waters. MMO contracted IECS at the University of Hull to develop a model of essential fish habitats which was produced in 2013. This was updated with new data and the use of it was discussed with partner agencies in 2016. Knowledge of essential fish habitats would also support licensing decisions. Currently information on particular fish stocks is provided in applications and advised on by our statutory advisors however, information is lacking on some locations and fish stocks. A dynamic model using best available evidence whose use is agreed with experts and government bodiescould provide some evidence to inform this gap. This evidence could also be used to inform management of habitats within marine protected areas. MMO would like the model to become operational by securing the support of stakeholders and ensuring the model has the latest data incorporated. It is also required that the model become dynamic so that as more data becomes available the model can be updated.
MMO use	**Marine Planning**: • To provide maps of essential fish habitats with greater spatial specificity that can be used for supporting marine plans • To provide evidence for developing explicit policies that protect essential fish habitats for environmental, social and economic outcomes

	Marine Licensing: • To inform assessments of marine development applications with supporting evidence on fish species, habitats and fish assemblages **Marine Conservation**: • To support management of important habitats within marine protected areas by improving the information on the location and characteristics of essential fish habitats
External interest	Cefas, Natural England
Delivery target	Q2 2018

2. Aims and objectives

Aim:
To operationalise the model prepared for MMO that spatially locates essential fish habitats in English marine plan areas with a high degree of confidence and resolution

Objectives:

- To gain agreement with Defra and key partners on minimum confidence thresholds for model use in prescriptive or spatially explicit marine plan policy development/ marine licensing decision making.
- To gain agreement with Defra and key partners on methods for using project outputs in marine planning and licensing decision making.
- To improve the resolution of the essential fish habitat model to at least the minimum confidence threshold agreed during aim number 1.
- To 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	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 Inshore and South Offshore marine plan areas, and to assess the relative value of these fish habitats to the regional commercial fisheries productivity and the ecosystem function. 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.
Academic	There are a large number of academic papers and books 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: Ecosystem approaches to fishery management through essential fish habitats Rosenberg et al. 2000
Other	Cefas have done a large amount of work on essential fish habitats in English waters and regularly update the information following surveys Ellis et al. 2012. They have produced a fish atlas for the Celtic Sea, North Sea and Baltic Sea Heesen at al. 2015 (ISBN: 9789050115377). They are currently developing evidence on various species and habitat preferences and impacts on structure and function of habitats. The Environment Agency has surveyed English Estuaries and coastal waters for a period of ten years to support Water Framework Directive monitoring. This information is valuable for assessing essential coastal and estuarine habitats for fish. A large multi-partner EU project called CHARM mapped part of the English channel's essential fish habitats. 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/

4. Current activity

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

5. Associated evidence requirements

Ref	Title
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 to gather evidence that can be applied within a marine management context. 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. This will be as and when resource is available and prioritised. 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

Table 1: Delivery timescales 2017 to 2020

Delivery Route	2017				2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Commissioning																
Knowledge Exchange/Partnering																
Influencing the research of others																

Key

	No activity
	Actively undertaking
	Outside of delivery target