



1. Requirement overview:

Requirement	Marine species migration pathways
Requirement detail	<p>Improved information on the migratory pathways, timings and relative conservation importance of marine species is required to inform balanced evaluation of the cost and benefits of protecting those pathways.</p> <p>Though information on all migratory species would be useful, early work will be to identify the species that are of most interest (including migratory fish), particularly species that are subject to statutory conservation measures.</p> <p>This requirement focuses on migration (predictable large-scale movement in space and time) rather than just mobility e.g. dispersal.</p>
MMO use	<p>Marine Planning:</p> <p>This will improve identification of intensively used sites or times of year when a species uses an area to migrate. This will help Marine Planning to better understand compatibility with human pressures and to consider addressing current or potential impacts in the marine plans, therefore improving delivery of marine planning.</p> <p>Marine Licensing:</p> <p>This will improve the consideration of migratory species in licence applications and could influence the need for, or nature of, conditions reflecting the importance of that area for migratory species. Information on timings will be of particular importance to increase the accuracy of time based conditions applied to licences, potentially increasing the effectiveness of advice given to the MMO but also ensuring any burden placed on activities is proportionate to the risk identified.</p>
External interest	Natural England, JNCC, Cefas, Scottish Natural Heritage
Delivery target	Q3, 2018

2. Aims and objectives

To describe migration pathways of marine species of interest in English waters by

- prioritising migratory species to address
- describing species migration pathway in space and time through the complete life history of individuals
- identifying important sites in that pathway eg high density areas, migration bottle necks, essential habitats and their purpose
- examining whether / how migration pathways may be impacted by climate change

3. Existing evidence

MMO	The MMO has done work in this area; MMO1034 modelled usage of the marine areas by bird species.
Academic	Very little has been published or is known about cetacean, pinniped or diadromous fish migrations (e.g. Gill et al, 2012) in English waters, although there is evidence of European Eel (<i>Anguilla anguilla</i>) migrating through the English Channel (Huisman et al, 2016). No literature appears to exist for the marine aspect of Lamprey migrations. There is some indication of harbour porpoise undertaking seasonal migrations in Danish waters within the North Sea (Jansen et al, 2012), however nothing has been published on movements in English waters.
Other	<ul style="list-style-type: none">• UNEP Convention on the Conservation of Migratory Species of Wild Animals (CMS or the Bonn Convention) UK National Report 2017• The Marine Life Information Network

4. Current activity

The MMO is currently involved with a project being undertaken by a student at Newcastle University looking at migratory routes of a number of protected bird species.

5. Associated evidence requirements

Ref	Title
R088	Spatial identification and categorisation of areas of particular importance to fish populations.

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. Similarly, where appropriate, the MMO will explore opportunities to influence the research of others to gather evidence that can be applied within a marine management context. As work progresses it is implicit that knowledge

exchange is required throughout the duration of this requirement and not limited to when delivery is complete.

Partnering

Delivery window: Q1, 2017 – Q1, 2018

There is currently interest across the Defra group in understanding this area further. Partnering with interested organisations is an opportunity the MMO would be interested in discussing further

Influencing the research of others

Delivery window: Q1, 2017 – Q1, 2018

Where appropriate, there is the opportunity for the MMO to support/influence the research of others in this field, as it is with the work currently underway and mentioned above. Scientific research in this field has the opportunity to have high impact and be directly applied within marine management decision making. Opportunities and discussions are welcomed in this area.

Knowledge exchange

Delivery window: Q3, 2017 – Q1, 2020

The breadth of this requirement means that knowledge exchange from completed research will form a part of the delivery of this requirement.

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
Partnering																
Influencing the research of others																
Knowledge exchange																

Key

	No activity
	Actively undertaking
	Outside of delivery target