

MMO Marine Protected Areas Fisheries Assessments Methodology

The need for assessment

In 2012, the Department for Environment, Food and Rural Affairs (Defra) announced a revised approach to the management of commercial fisheries in European marine sites (EMS)¹. The objective of this revised approach is to ensure that all existing and potential commercial fishing activities are managed in accordance with the provisions of Article 6 of the Habitats Directive². The revised approach was extended to include management of commercial fisheries in marine conservation zones (MCZ) in 2014³. This approach is being implemented using an evidence based, risk-prioritised, and phased basis. Risk prioritisation is informed by using a matrix of the generic sensitivity of the sub-features of EMS to a suite of fishing activities. These activity/sub-feature interactions have been categorised according to specific definitions, as red, amber, green or blue⁴.

Activity/sub-feature interactions identified as red, occurring in sites designated prior to 2013, were addressed first, with management measures to avoid deterioration of sites where these interactions occur implemented by the beginning of 2014⁵.

Management measures required to address all other interactions in sites designated before 2016 must be identified by the end of 2016.

Activity/sub-feature interactions identified within the matrix as amber require a site-level assessment to determine whether management of activity is required to conserve site features. Activity/sub-feature interactions identified within the matrix as green also require a site level assessment if there are “in combination effects” with other plans or projects.

Site-level assessments are carried out in a manner consistent with the requirements of Article 6(3) of the Habitats Directive for EMS and the requirements of section 126 of the Marine and Coastal Access Act 2009 for MCZ. For EMS the assessments will determine whether, in light of the sites conservation objectives, fishing activities are having an adverse effect on the integrity of the site. For MCZ the assessments will determine whether there is a significant risk of fishing activities hindering the conservation objectives of the site.

¹ www.gov.uk/government/publications/revised-approach-to-the-management-of-commercial-fisheries-in-european-marine-sites-overarching-policy-and-delivery

² Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora

³ The MMO responsibilities in relation to management of MCZs are laid out in Sections 125 to 133 of the Marine and Coastal Access Act 2009

⁴ Managing Fisheries in MPAs matrix: www.gov.uk/government/publications/fisheries-in-european-marine-sites-matrix

⁵ For designated EMS

Assessment process

The fisheries assessments have two stages:

Part A: A coarse assessment using generic sensitivity information to identify which fishing activities can be discounted from further assessment (Part B) as they are not taking place or not a significant concern.

Part B: An in-depth analysis to assess the effects of remaining pressures on the features of the site, including an in-combination assessment between all activities occurring.

Sources of evidence

Evidence used in the assessments falls into two broad categories:

1. Fishing activity information. This includes patterns, intensity, and trends of fishing activities and types of gear used.
2. Ecological information, in particular the location, condition and sensitivity of designated features.

Fishing activity information

VMS data

VMS data are derived from positional information reported by UK and other Member States (OMS) vessels carrying the EU mandated vessel monitoring system (VMS). Since 2015 all commercial fishing vessels of 12 metres and over in length have been required to report their position, course and speed at regular intervals using VMS. Prior to 2015 this requirement applied to commercial fishing vessels of 15 metres and over.

VMS data were analysed in ArcGIS. VMS reports not associated with fishing activity were removed. These included reports with speeds greater than 6 knots (indicating non-fishing) and reports from vessels known to be performing guard ship duties for marine developments.

Gear type was assigned to VMS data by matching each report to gear types recorded in relevant landings declarations, logbooks and the Community Fishing Fleet Register.

Landings data

Landings data are recorded at International Council for the Exploration of the Sea (ICES) statistical rectangle⁶ level through landings declarations and logbooks.

⁶ ICES statistical rectangles are part of a widely used grid system for North Eastern Atlantic waters. For more information see: www.ices.dk/marine-data/maps/Pages/ICES-statistical-rectangles.aspx

In areas where a high proportion of landings came from vessels with VMS, landings data from vessels with VMS were linked to VMS-derived location reports to provide spatial estimates of where landings were derived from within an ICES rectangle, the spatial distribution of landings from VMS vessels was used as a proxy for estimating distribution of landings from non-VMS vessels.

Landings data were analysed to determine quantities and values of landings by gear group, species and vessel size group.

Pressure footprint

To provide a link between fishing effort and impact on features a footprint analysis approach was used. A Defra report was commissioned to test the feasibility of a method for measuring spatial footprint of fishing gear (ref: MMO1108⁷).

The report suggests a simple fishing impact equation:

$$P = \frac{E \times A_{(i)}}{A_{(f)}}$$

Where: E = fishing effort (vessel days) expended within the feature area; A(i) = the area fished by an individual vessel in one day; A(f) = the total area of the protected feature; P = fishing footprint.

The equation is a straightforward approximation of the area impacted by fishing as a proportion of the total area of a protected feature or site. This allows for a standardised methodology for assessing the impact of fisheries.

Vessel sightings

Sighting information is recorded into the Monitoring Control and Surveillance System (MCSS). It is collected by various bodies such as MMO coastal staff, IFCA's, Navy patrols and other relevant agencies and contains the following:

1. Date and time of sighting
2. Reporting body
3. Vessel name, ID, gear type
4. Approximate location of vessel
5. Approximate speed of vessel
6. Whether the vessel is: Laid/tied up, steaming or fishing.

⁷www.gov.uk/government/uploads/system/uploads/attachment_data/file/523798/Evidence_Project_Register.csv/preview

Fisheries sighting layer

Source: “Understanding the distribution and trends in inshore fishing activities and the link to coastal communities”⁸

A Defra commissioned Cefas project to better understand trends in inshore fisheries, including collating and analysing fisheries sightings data from 2010 to 2012. These data were displayed as national layers of sightings (of certain fishing activities - trawling, potting, netting etc) per unit effort.

MMO and IFCA expert opinion on fishing activity

Source: MMO and IFCA

MMO marine officers and IFCA inshore fisheries and conservation officers provided information on fishing activity within MPAs. Information included number and size of vessels fishing, target species, type and amount of fishing gear used and seasonal trends in activity. Confidence levels were provided alongside expert opinion and estimates were provided where exact numbers were not known.

Fishermap data

Source: 2012 Marine Conservation Zone Project Stakmap Commercial Fishing under 15m vessels lines summary by month

In 2012 the Fishermap project conducted interviews with almost 1000 skippers of the under 15m fishing fleet, with the aim of mapping the activities of the commercial fishing fleet. Of those interviewed, 594 gave their permission for their data to be shared with third parties.

The data are presented as a year’s activity, collected from a series of monthly totals of vessel visits, per grid cell.

Summary data is provided as a series of monthly totals of vessel visits per grid cell.

Fishermap data and expert opinion is used to calculate numbers of under 15m vessels operating in a given site.

Ecological information

The fisheries assessments use the conservation advice packages produced by Natural England and the Joint Nature Conservation Council. These provide information on the features of the site, their area and conditions. The packages also contain an advice on operations and supplementary advice documents which allow the assessment of which pressure/gear combinations a feature may be sensitive too.

⁸www.randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18126&FromSearch=Y&Publisher=1&SearchText=MB0117&SortString=ProjectCode&SortOrder=Asc&Paging=10

For some assessments, further ecological information has also been provided by Natural England. This information is available in the relevant assessments.

Sensitivity and vulnerability

The following definitions of sensitivity and vulnerability are used in MMO assessments.

Sensitivity

Sensitivity is defined as:

“A measure of tolerance (or intolerance) to changes in environmental conditions.”⁹

Vulnerability

Vulnerability is defined as:

“a combination of the sensitivity of a feature to a particular pressure/activity, and its exposure to that pressure/activity.”

⁹ Tilin *et al* 2010, Roberts *et al* 2010

References

Roberts, C., Smith, C., Tillin, H. Tyler-Walters, H. (2010). Review of existing approaches to evaluate marine habitat vulnerability to commercial fishing activities.

Tillin, H.M., Hull, S.C., Tyler-Walters, H. (2010) Development of a sensitivity Matrix (pressures-MCZ/MPA features). Report to the Department of Environment, Food and Rural Affairs from ABPMer, Southampton and the Marine Life Information Network (MarLIN) Plymouth: Marine Biological Association of the UK. Defra Contract No. MB12 Task 3A, Report No. 22