

ECOREGION Celtic Sea and West of Scotland
SUBJECT Request from the European Commission on distribution of the stock of megrim in Subarea IV and Division VIa

Advice summary

1. The factors influencing long-term or cyclical changes in the distribution of megrim are unknown and are not expected to be known in the near future. ICES has not identified any long-term or cyclical changes in the distribution of megrim.
2. Currently, TACs are set separately for two areas: (i) ICES Subareas VI, XII, and XIV and Division Vb, and (ii) EU waters of Division IIa and Subarea IV. However, since 2011, ICES has considered megrim in Subarea IV and Division VIa as a single stock and has issued advice on that basis (ICES, 2011a). This has led to an inconsistency between the management and assessment units. ICES has no basis on which to advise a split of the TAC, and recommends a single TAC area.
3. The choice of having multiple TACs within a single stock unit is a management decision. From a biological perspective, the management and assessment units should be appropriately aligned and they should encompass the full spatial structure of the stock. ICES recommends that the management unit should match the assessment unit.

Request

On the basis of this misreporting and the information from the on-going surveys ICES are asked to provide advice on the current distribution of this stock between the two ICES sub divisions. In doing so ICES are asked to;

- *Identify any long term or cyclical change in distribution;*
- *Identify the split that could be applied in further management of two areas.*
- *Discuss the advantages and disadvantages of split management versus the possible merging of the two TAC areas; make a recommendation on the best way forward for the management of the stock.*

Elaboration on the advice

1. Identify any long-term or cyclical change in distribution.

No quantitative information is available that specifically describes the long term stock distribution of megrim across the two TAC areas, which could be used to determine whether there have been any long-term or cyclical changes in the relative distribution of megrim between the two TAC areas. It is plausible that the relative distribution may change throughout the year due to migration and spawning patterns (Anon., 2001). Over a longer time frame, the relative distribution may change due to stock size and demographic structure as there is evidence of age- and gender-specific bathymetric distributions (Sánchez *et al.*, 1998; Gerritsen *et al.*, 2010).

2. Identify the split that could be applied in further management of two areas.

A precautionary TAC based on average landings was first introduced in 1985 for Area 1 (ICES Subareas VI, XII, and XIV and Division Vb) while a TAC for Area 2 (EU waters in ICES Subarea IV and Division IIa), also based on average landings, was introduced later in 1998. This resulted in an Area 2 TAC that was ~60% of the Area 1 TAC (i.e. ~ 35 % of the total of the two TACs). The ratio of the two TACs has remained fairly stable since they were introduced.

Prior to 2009, ICES did not provide advice for megrim in Area 2 and as such there was no clear scientific basis for setting a TAC in this area. In 2008 ICES noted that “scientific surveys show that a significant population of megrim exists in the northern part of Division IVa and landings are reported from this area (ICES, 2008). However, this stock component is not considered by any ICES expert group”. ICES (2009) concluded that the spatial distribution of landings data and survey catches provide robust evidence that the megrim population is contiguous between ICES Divisions VIa and IVa. This has subsequently been supported through recent genetic studies (MacDonald and Prieto, 2012), indicating that one stock exists in Divisions IVa (northern North Sea) and VIa (West of Scotland) and another separate stock in Division VIb (Rockall). Combining megrim in Divisions VIa and IVa as a single stock unit in 2011 (ICES, 2011a, ICES 2011b) implies that the assessment unit and the management units are no longer consistent.

In 2012, ICES produced an analytical assessment and catch advice for the new assessment unit for the first time (ICES, 2012a, 2012b). This showed that the stock is exploited well below F_{MSY} and the advice for 2013 was that landings should be no more than 4700 tonnes. In order to provide advice consistent with the two management areas, STECF (2012) proposed that the relative proportions of megrim biomass observed from the Scottish and Irish anglerfish and megrim industry–science surveys (SAMISS/IAMISS) in Subarea IV and Division VIa could be used to distribute the TAC between the two areas. In an attempt to take account of year effects in the survey biomass estimates, STECF suggested using average values based on the three most recent years (2009–2011). In applying this approach, STECF considered that the average survey biomass estimates were 60% for Area 2 and 40% for Area 1. The European Commission TAC proposals for 2013 (Anon., 2012) were based on applying these proportions to the catches corresponding to ICES advice for Subarea IV and Division VIa (4 700 t). This implied catches in 2013 of 2820 t for Area 2, 2040 t for Area 1, and including an allocation of 160 t for Division VIb.

Over the seven-year period of the SAMISS/IAMISS surveys, the proportion of the stock occurring in Area 2 has shown moderate variation (in the range of 55–68%), despite a change in the timing from quarter four to quarter two. However, these surveys remain snapshots of the relative distribution between the two management areas and it is unknown whether they are representative of the distribution during other periods of the year. Additionally, area misreporting makes it difficult to reliably analyse seasonal and spatial trends based on commercial catch data, which might have otherwise provided further information on changes in the stock distribution. Further information on the spatial and temporal distribution of the stock is required to be able to provide advice on the overall annual stock distribution. Furthermore, given the relatively short survey time-series, it is not possible to verify if there have been long-term fluctuations in stock biomass between the two management areas. Therefore, the stability of the distribution between the two management areas over longer time periods remains unknown.

3. Discuss the advantages and disadvantages of split management versus the possible merging of the two TAC areas; make a recommendation on the best way forward for the management of the stock.

The choice of having multiple TACs within a single stock unit is a management decision. From a biological perspective, the management and assessment units should be appropriately aligned and should encompass the full distribution of the stock. Further spatial management may be necessary if there are concerns about the fishery targeting specific stock components, leading to increased risks of them becoming depleted. This requires reliable information on the existence of stock components and their dynamics. ICES advises that the management units should match the assessment units.

Basis of the advice

The advice is based on analyses in the reports referenced above as there was no basis for new analyses.

Sources

- Anon. 2001. Distribution and biology of anglerfish and megrim in waters to the west of Scotland. European Commission – DG XIV Study Contract 98/096. 230 pp.
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- ICES. 2008. Report of the Working Group on the Assessment of Northern Shelf Demersal Stocks, 15–21 May 2008. ICES CM 2008/ACOM:08.
- ICES. 2009. Report of the Benchmark and Data Compilation Workshop for Flatfish (WKFLAT), 6–13 February 2009, Copenhagen, Denmark. ICES CM 2009/ACOM:31. 192 pp.
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- ICES. 2012b. Report on the Inter-Benchmark Protocol for Megrim in Subarea IV and Division IVa (IBPMeg), 2–6 April 2012. By correspondence. ICES CM 2012/ACOM:67. 23 pp.
- Gerritsen, H. D, McGrath, D., Lordan, C., and Harlay, X. 2010. Differences in habitat selection of male and female megrim (*Lepidorhombus whiffiagonis*, Walbaum) to the west of Ireland. A result of differences in life-history strategies between the sexes? *Journal of Sea Research*, 64: 487–493.
- MacDonald, P., and Prieto, V.C. 2012. Assessment of the population structure of common megrim (*Lepidorhombus whiffiagonis*) on the Northern Shelf using genetic markers. Unpublished report from the NAFC Marine Centre, University of the Highlands and Islands. 31 pp.

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