

ANNEX I

PELAC proposal for a rebuilding plan for Western horse mackerel

28 July 2020

Background

1. The development of a robust and scientifically evaluated management plan for Western horse mackerel (WHOM) has been a long-term objective of the Pelagic Advisory Council (PELAC). We achieved this very early on in our existence in 2007, but unfortunately the agreed management plan was no longer considered precautionary by ICES in 2013. Efforts to achieve this objective again have been ongoing since 2015, but have encountered a number of challenges.
2. In 2015, the Marine Institute (MI), together with Cefas, sought to update the agreed management plan of 2007, which was no longer considered precautionary. There was a change in perception of the stock related to perceived changes in the egg survey, which changed the perception of the assessment as well. The MI and Cefas conducted two evaluations, and found that even with no fishing, the risk of falling below B_{lim} was more than 5%. While the SSB appeared to increase, the uncertainties were still so high that it increased slowly. The uncertainty in the assessment was therefore too large to conduct a meaningful Management Strategy Evaluation (Campbell et al. 2015).
3. In 2017, the inclusion of new data sources during a benchmark meeting resulted in a new assessment approach (ICES 2017). From that assessment, new reference points were estimated.
4. In 2018, ICES issued an advice for a considerable increase in TAC, close to $MSY B_{trigger}$, due to re-scaling of the assessment (ICES 2018).
5. An external expert (Landmark Fisheries) carried out an analysis to look at possible HCRs for potential management plans for WHOM. In most of the scenarios, the stock was expected to increase (Cox et al. 2018). The outcomes were presented at WGWISE in 2018. The conclusion was that while the approach was welcomed, it did not take into account the right types of uncertainty in the starting conditions, which then lead to an overly optimistic evaluation (ICES 2018).
6. In 2019, an inter-benchmark meeting led to a revision of the reference points, indicating the stock was just above B_{lim} (ICES 2019). A collaboration between scientists working on different rebuilding methods for herring stocks subject to a zero catch advice (Celtic Sea, Western Baltic spring spawning and 6a herring) was set up, to explore whether these techniques could be applied to WHOM (PELAC 2019). While formally the stock is not in the rebuilding phase, it could potentially happen at any moment because of revisions in the assessment. The overall stock biomass levels are considered low, the assessment is volatile and the uncertainties are great. Therefore, the PELAC considers the development of a rebuilding plan more appropriate than a management strategy.

7. In February 2020, an ICES workshop on rebuilding plans (WKREBUILD) was held, which followed from the lack of criteria within ICES to evaluate rebuilding plans, making it difficult to get them through the ICES system. The work on Western horse mackerel was presented as a case study. A recommendation to ICES followed from the workshop regarding the estimation rebuilding timeframe, as opposed to the current ACOM rule that requires rebuilding to take place within one year (ICES 2020).
8. A dedicated group of experts on Western horse mackerel and management strategy evaluation assembled under the remit of the Pelagic Advisory Council in the first half of 2020, to develop the data and models to evaluate potential recovery measures for the Western horse mackerel stock. The group carried out a full evaluation of potential recovery measures based on two stock assessments (stock synthesis as used by ICES WGWIDE and an exploratory SAM assessment) and using two evaluation techniques (EqSim simulator and SAM HCR forecast). On the basis of the evaluations, the PELAC selected a specific set of recovery measures that are embedded in this rebuilding plan. The evaluation process is fully documented and will be submitted for scientific review by ICES.

Rebuilding Plan Western horse mackerel

ICES Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a–c, and 7.e–k in the Northeast Atlantic

Objective

The purpose of the Western horse mackerel rebuilding plan is to ensure stock recovery to safe biomass levels and a long-term stock exploitation that is consistent with the precautionary approach and with achieving the objective of maximum sustainable yield (MSY).

Criteria and definitions

Article 1 - Subject matter

This rebuilding plans pertains to the Western horse mackerel stock.

Article 2 - Geographical definitions of stock

ICES Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a–c, and 7.e–k in the Northeast Atlantic.

In certain times of the year, for the purposes of the scientific assessment, the divisions between the Western and North Sea horse mackerel stocks change. ICES division 4a and the Western part of division 3a are considered to be part of the North Sea stock in quarters one and two, but are part of the Western stock in quarters three and four (ICES 1989).

Article 3 Definitions

1. “Rebuilding plan timeframe”: the timeframe for achieving the rebuilding plan target is a maximum of ten years, although all attempts will be made to realise that target within five years.

2. “Rebuilding plan target”: when the spawning stock biomass is greater than B_{pa} for a minimum of three consecutive years.

Biological reference points used in this recovery plan are defined in the introduction to the 2018 ICES advice (ICES (2018). 1.2 Advice basis, ICES. ices.pub.4503).

Article 4 Reference points

1. The applicable biomass reference points for the Western horse mackerel stock shall be as follows: $B_{lim} = 834\,480$ tonnes.
 $MSY\ B_{trigger} = B_{pa} = 1\,168\,272$ tonnes.

It should be noted in case of this rebuilding plan the value of $MSY\ B_{trigger}$ is identical to B_{pa} and should be read as one wherever mentioned in the text. Should this relationship change in the future the plan is no longer valid.

2. The maximum fishing mortality associated with Maximum Sustainable Yield (F_{msy}) for the Western horse mackerel stock shall be as follows: $F_{msy} = 0.074$.

These values are based on the 2019 inter-benchmark report (ICES 2019).

Article 5 Rebuilding plan targets and measures

1. The rebuilding plan will be considered to be achieved when the spawning stock biomass is greater than B_{pa} for a minimum of three consecutive years.
2. The timeframe for achieving the rebuilding plan target is a maximum of ten years although all attempts will be made to realise that target within five years.
3. The TAC setting mechanism during the rebuilding plan shall be as follows:
 - a. When the stock (SSB) is estimated to be below B_{lim} in the assessment year, the TAC will be fixed with a fishing mortality equivalent to 20% of $F_{msy} = 0.015$.
 - b. When the stock (SSB) is estimated to be between B_{lim} and B_{pa} in the assessment year, the TAC will be fixed with a fishing mortality equivalent to:
$$0.015 + (SSB - B_{lim}) / (B_{pa} - B_{lim}) * (F_{msy} - 0.015)$$
 - c. When the stock (SSB) is estimated to be above B_{pa} in the assessment year, the TAC shall be fixed with a fishing mortality equal to F_{msy} (0.074), subject to the constraint that the change in TAC compared to the current (assessment) year does not exceed 20%.

Article 6 End of the rebuilding plan

The rebuilding plan may be superseded by a long-term strategy for the stock when, according to ICES, the spawning stock biomass is assessed to have been above B_{pa} for three consecutive years.

Should any other underlying assumption, or the definitions of the stocks in Article 2, of the rebuilding plan change based on new scientific knowledge this rebuilding plan will be deemed no longer to be applicable.

Article 7 Evaluation and implementation

This rebuilding plan will be submitted to the European Commission by the Pelagic AC with a request that the Commission forward it to ICES for scientific review of the management strategy evaluation of this rebuilding plan. The Pelagic AC requests that the rebuilding plan option, if deemed precautionary by ICES, be included in the short-term forecast options table for the following year and thereafter in the ICES advice.

References

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