REPORT

ICES BENCHMARK WORKSHOP ON NORTHERN HADDOCK STOCKS (WKHAD)

ICES HQ, COPENHAGEN
24-28 FEBRUARY 2014

Author: Kenny Coull (SFF – NWWRAC Representative)

Participants: Experts: C Needle (Chair), R Catarino, C Berg.
External experts: N Cadigan (Canada), K Kleiner and P Spencer (USA).
ICES Secretariat: B Schoute.
NWWRAC: K Coull (SFF)

Purpose: Evaluate the appropriateness of data and methods to determine stock status and investigate methods for short term outlook for haddock stocks in Subarea IV (North Sea), Division IIIa (West Skagerrak) and Division VIa (West of Scotland).

AGENDA AND REPORT

The meeting was preceded by a three day data collection workshop where consideration had been given to quality of data, including discards and estimates of misreporting. A series of working documents were prepared for review at the Benchmark Workshop

1. Opening Presentation (Stock Identity)

CN opened this session and outlined the case for combining the assessment for the North Sea and West of Scotland haddock stock. The conclusions presented were:

- No genetic evidence for separate stock
- Adults relatively stationary
- High likelihood of exchange of larvae and juveniles
- Survey based stock trends similar
- Distribution maps (survey & landings) show relatively unbroken distribution across Northern Shelf.
- Length and age distributions (mostly) not significantly different between North Sea and West of Scotland.
- Most data and analyses indicate one stock.

The invited external experts spent a great deal of time pressing CN on many aspects of his presentation and given that he was often referring to input from people who had contributed at the Data Compilation Workshop, some matters remained unresolved at this stage with clarification to be sought (for confirmation).

During general discussion several points were debated, including:

- We are unaware of the contribution of each spawning area.
- Consideration of biological issues and historic exploitation raised concern as how to proceed.
- Misreporting of catch / landings created problems for assessment in West of Scotland. Treating as one stock overcomes this.
- Practically, it is not currently possible to assess (accurately) each component separately.
- Catch base assessment could only be done as one stock.

In principle, **it was agreed that the stock should be assessed as one unit** but the following points needed further consideration if this were to be accepted:

- It would be desirable to maintain full structure (of spawning stock biomass).
- Selection pattern for fisheries should remain consistent.
- Recognition that how to manage the stock becomes the real issue but this matter would be revisited later, however,
- Management recommendations should be made according to the current spatial areas.
- Data issues and assessment methods needed to be fully considered.

With the above points in mind, an external expert reminded that assessment as one unit would be more biologically defensible. It was hoped that an example of implication of split of stock for management purposes could be provided, however, this may well be problematic.

2. Presentation on Data

This session was led by CN, drawing heavily on the information gathered at the Data Compilation Workshop.

Natural Mortality – although CN indicated it could be sufficient to assume North Sea M applies to VIa, the external reviewers indicated they were unable to comment due to lack of information or expert input.

Maturity – No major discontinuity in spawning aggregations across stock regions.

Length of time series – outlined the time series that were available for landings, discards, Industrial by-catch and surveys (and data that had been inferred). This generated a great deal of discussion on what time period and surveys should be included when testing the various models on the combined stocks. Agreement was reached that this was an opportune time to use the IBTS surveys for Q1 and Q3 rather than only using the Scottish and English surveys.

3. Agree the Preferred Method for Evaluating Stock Status

In recent years the assessments for North Sea (IIIa & IV) have been carried out using XSA (via the FLR library implementation FLXSA) with exploratory survey-based analyses also carried out each year using SURBAR. This method was used for exploratory analyses and was not considered as a candidate for the final assessment method (in line with conclusions at ICE-WGMG 2009).

The TSA (Time-Series Analysis) method is currently used in the West of Scotland (VIa) assessment.

The SAM (State-space Assessment Model) is used for several assessments within ICES.

In order to inform decision making for future options, a programme of work was allocated to sub-group to run the existing models (XSA, TSA and SAM) for the split areas and for combined areas accounting for permutations of:

- Old and new natural mortality rates
- Changes to start of time series
- With and without inclusion of zero age data

Given there were only 3 experts available and the need to refer to others by email, this proved to be time consuming and disjointed. After reviewing the outputs from the test runs general discussion on preferred options threw up several points:

- TSA needs adjustment to deal with zero age data
- TSA more rigid but can handle landings and discards separately
- SAM more flexible and room for exploration.
- Definite preference from Scotland for TSA as that's where current expertise exists.

4. Outcome

The TSA option was selected as the principle stock assessment method for Northern Shelf haddock with SAM and SURBAR retained as exploratory tools which will continue to be developed. Main reasons for choice were that:

- TSA deals better with landings and discards (separately)
- TSA deals better with years of large recruitment (SAM tends to underestimate very large year classes).
- Developer of TSA and the Northern Shelf assessor are both based in the same institute which should ensure continuity and ensure prompt response when problems arise.
- Biological Reference points had still to be evaluated and were to be completed after the meeting.

Suggestions for recommendations from WKHAD, included:

- Explore the development of a combined Northern Shelf IBTS index for haddock.
- Explore how to protect spawning aggregations in the future.
- How to avoid local depletion of stock?
- How to split the advised TAC for management purposes? (Although preliminary work was done to estimate split, no work was done to consider the implications – quantities).
- Evaluation of the stock structure in the Clyde area could result in a separate assessment for this area.
- Repeat study on otolith microchemistry to inform on juvenile distribution (nursery contribution to recruitment.

5. Summary

This proved to be a very busy meeting which depended heavily on the input from a small team of three experts, and, understandably a great deal of time was spent referring back to others for clarification on many points. Generally, the Terms of Reference were addressed with agreement reached on the merits of combining the assessment for haddock stocks in Subarea IV (North Sea), Division IIIa West (Skagerrak) and Division VIa (West of Scotland). The preferred assessment method of the stock assessor (TSA) was accepted by the meeting as being most appropriate. However, it probably could be said that with no strong reasons to oppose the preferred method the external experts were faced with a *faite accompli* regarding choice.

Evaluation of the possible implications for reference points was not addressed until the later stages of an extended meeting and further work was to be carried out during post meeting wash up.

The finalised report should be completed by 1 April 2014 and would be available through ICES website.

By Kenny Coull, 14 March 2014