REPORT

Meeting: **Northern Shelf Cod Tiger Team - Stakeholder briefing**
Parties: **ICES, stakeholders**
Date: **4 September 2026**
Location: **Teams**
Chair: **Colm Lordan**
Rapporteur: **NSAC Secretariat**

The objective of ICES Tiger Team was to improve confidence and trust in the stock assessment for Northern Shelf Cod. The review brought together experts from North Sea countries, wider European scientific communities and international reviewers. The work also considered recent research and advice concerning genetic sampling for Northern Shelf Cod.

Two assessment approaches were developed and submitted for review.

a) Combined Single-Stock Model

The first approach was a combined stock model extending back to the 1960s and incorporating the stock in Division 6a, west of Scotland.

At the 2023 benchmark, the combined-stock model had demonstrated poor retrospective patterns and was therefore considered unsuitable for providing advice at that time. The Tiger Team subsequently undertook substantial work to improve the model. The revised model demonstrated considerably more robust behaviour, with different model configurations producing broadly similar trends and stock-development patterns.

b) Multi-Stock Model

The second approach was the multi-stock model that had been used as the preferred model since the 2023 benchmark.

The Tiger Team conducted extensive testing of this model, including assessments of different settings and configurations. Although the multi-stock model has a shorter historical time series because historical data could not be fully disaggregated among the different sub-stocks, its estimated stock dynamics were broadly similar to those of the combined-stock model over the period in which the two models overlap.

External review findings

The four external reviewers concluded that the Tiger Team process had been thorough, well documented and successful in addressing many of the concerns previously raised regarding the Northern Shelf Cod assessment.

The review found that:

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- The revised combined single-stock model showed a substantial improvement in its historical retrospective pattern.
- The multi-stock model had undergone extensive validation.
- Testing indicated that the multi-stock model could reliably recover population dynamics from the available data.
- Simulation analyses were undertaken to determine whether the multi-stock model could recover different stock dynamics.
- Sensitivity analyses examined the effects of alternative model settings and data.

Importantly, the reviewers did **not** identify either model as clearly superior on purely technical or diagnostic grounds. The choice between the two therefore involved broader trade-offs, including:

1. Model complexity;
2. Workload associated with operating the model;
3. Communicability of the results;
4. Conservation risk, particularly in relation to the depleted southern sub-stock.

Scientific limitations

The main outstanding issue concerns seasonal mixing and the composition of catches originating from the different sub-populations in the North Sea. Neither assessment approach can fully resolve this issue using the currently available information. More extensive genetic sampling will be required to substantially improve understanding of stock mixing.

The reviewers also recommended that future work should include a Management Strategy Evaluation (MSE).

ICES ACOM decision on the preferred model

ACOM identified a stronger rationale for using the multi-stock model, mainly because of the priority attached to understanding the dynamics of the depleted southern sub-stock. The multi-stock model incorporates existing information on sub-stocks and cohort dynamics and was considered to provide less uncertain and less inter-annually variable estimates than alternative approaches based primarily on survey analysis.

However, it was acknowledged that translating the outputs of the multi-stock model into fisheries advice remains relatively complex. ACOM will need to consider how best to implement the model outputs and whether changes to the advice framework are required.

The hybrid approach considered combining elements of the single-stock and multi-stock approaches. One possible implementation would have involved running the combined single

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stock model and periodically running the multi-stock model, with survey information used between assessments to provide indications of stock development in different areas.

The approach was not taken forward because its practical implementation had not been sufficiently developed. ACOM leadership also considered that, if survey information were being used to obtain information on the different sub-stocks, it would be preferable to use the full multi-stock model rather than introduce an additional hybrid methodology.

There was also concern that maintaining both models could result in a situation in which both assessments were routinely run, creating additional workload without providing a clear scientific or management benefit.

Forecast development

The Tiger Team has developed a more flexible forecasting model capable of broadly replicating standard SAM-type forecasting approaches while representing uncertainties in recruitment and other factors in a more statistically robust manner.

Reference points

The principles agreed for determining reference points were reported to be broadly consistent with those used for the previous multi-stock model. However, updates to the stock-recruit time series resulted in some cases where previously used stock-recruit models no longer provided statistically satisfactory fits. Alternative approaches were therefore required for some stocks.

For fishing mortality reference points, including FMSY, and the associated BMSY, the lower-productivity regime was considered appropriate and remains consistent with the approach used at the previous benchmark.

For some stocks, the breakpoint for the Blim reference point was estimated using the full time series rather than the truncated series because of model-fitting limitations associated with the latter.

Genetic sampling and stock-mixing uncertainty

The existing lack of genetic information limits the ability to determine how catches are distributed among the three sub-stocks and consequently limits the development of robust area-based advice.

An EU-funded project, Gen-DC, had previously supported genetic sampling work. Preliminary consideration had been given to a follow-up genetics and sampling programme. The proposed programme could operate over approximately two to three years. Its purpose would be to generate the information required to support future area-based advice.

The existing indicative timeline for the development of area-based advice, potentially extending towards 2030, was discussed.

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Mixing and fishing mortality assumptions

Stakeholders questioned whether the advice effectively incorporates an assumption of complete correlation between fishing mortality affecting the different sub-stocks, even though the assessment model itself does not simply assume 100% mixing.

It was clarified that the model handles uncertainty in mixing within catches rather than assuming that there is necessarily complete mixing. The precautionary framework effectively assumes that the fishing pattern observed in the previous year will continue when fishing effort changes. This is recognised as a simplification, reflecting the absence of sufficient information to determine where fishing effort can occur without encountering particular sub-stocks.

It was also noted that management measures designed specifically to reduce catches of southern cod may help to decouple fishing mortality between areas and sub-stocks. The multi-stock model may be better placed to identify differences in stock development where such effects occur.

Evidence concerning the southern sub-stock

Stakeholders also asked whether the conclusion that the southern sub-stock is depleted represented new evidence generated by the Tiger Team or remained an assumption.

The response highlighted that, historically, the southern North Sea accounted for more than half of the catches and represented the largest component of catches. Over time, the contribution from the southern area has declined substantially and is now described as being close to negligible. Changes were also observed in the relative contribution of the Viking and north-western areas.

While the catch reconstruction cannot definitively identify the biological origin of every catch in terms of sub-stock population, the pattern in the catch data provides a strong signal that the southern North Sea sub-stock is depleted.

Stakeholder and scientific perspectives

Stakeholders acknowledged that the Tiger Team had probably improved the scientific basis of the assessment, but that the problems relating to the assumption of mixing in the advice remain and that no solution to this in the shorter term was offered.

ICES Chair emphasised that although the process ultimately resulted in a recommendation similar to the previous strategic decision to use a multi-stock assessment, this outcome was not predetermined. The team considered a broad range of options, including MSE and population-specific assessments, before concluding that the available information supported the improved single-stock and multi-stock approaches.

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The scientific conclusion was that the multi-stock model represented the best use of the scientific information currently available, although it does not provide the basis for area-based advice.

Next steps

2 September 2026	Tiger Team and North Sea Working Group meeting; principles for reference points for the three sub-stocks agreed.
11 September 2026	Updated assessment incorporating 2025 data; reference points to be estimated and reviewed.
21 September 2026	North Sea Working Group to use the reference points to run forecasts and develop catch options for 2027 advice.
1–2 October 2026	Advice Drafting Group to review the draft advice.
7 October 2026	ACOM web conference to approve the advice.
9 October 2026	Planned publication of the Tiger Team benchmark report, North Sea Working Group report and Northern Shelf Cod advice.

Future work priorities

The meeting identified several areas requiring continued attention:

- **Genetic sampling**
- **Management Strategy Evaluation**
- **Historical data disaggregation**
- **Continued development of advice**
- **Stakeholder communication:** A short explanatory communication is planned alongside the publication of the advice to provide a more accessible explanation of the Tiger Team's work. Further stakeholder briefings may also be considered following publication.

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