

Executive summary (WKROUNDMP2)

A joint ICES / STECF meeting was held in Hamburg 20-24 June 2011, to prepare an Evaluation of multi-annual plans for cod in Kattegat, North Sea, Irish Sea and West of Scotland. The meeting involved STECF, ICES scientists dealing with Economy and Biology and included Observers (Commission staff, Managers, Stakeholders). Three separate reports to the STECF were prepared by the EWG-11-07, one on the Impact Assessment of Southern hake, *Nephrops* and Angler fish (EWG-11-07c) and another on the Impact Assessments for Baltic cod (EWG 11-07a) and this third on the Evaluation of Cod in Kattegat, North Sea, West of Scotland and Irish Sea (EWG-11-07b) and clarification of Advice on NS whiting. The summary below relates to NS cod and whiting aspects in particular

Given that the plan is only into place for 3 years, it is premature to conclude on the medium term impact, but STECF has drawn the following main conclusions

Objectives have not been met in terms of F. From a biological perspective all the cod stocks covered by the plan are currently likely to have an SSB below Blim. However, for North Sea and West of Scotland cod SSB has increased in recent years. Fishing mortality has not declined as envisaged by the plan. While mortality is considered to be well above the target objectives in line with the current plan, the exact level of F is unknown due to uncertainties in mortality estimates arising from *inter alia* unallocated removals, catches in excess of TAC and other sources of mortality. Medium term simulations based on the current rate of change per year in F suggest that for North Sea, Irish Sea and West of Scotland cod stocks it is unlikely that following the current regime F will reduce sufficiently to reach $F=F_{msy}$ by 2015. Currently it is not possible to evaluate the likely success in terms of F by 2015 for Kattegat cod.

Impacts of the multi-annual plan on the environment and the ecosystem: Reductions on discards, on commercial and non-commercial species, associated with Article 11 and Article 13 (technical measures) have been significant when used in some areas (e.g. North Sea). Some technical measures have significantly reduced commercial by-catch. Reported landings in most areas are in line with the plan, but due to high discards in some areas, catches are well in excess of TAC e.g. West of Scotland. Positive responses in biomass may have been hindered by external factors (e.g. seal predation on the West of Scotland).

Trends in fleet capacity: There has been a substantial decline in effort, although much of this occurred before introduction of the current cod plan. Otter trawl gears contribute the highest effort amounts, with the importance of TR1 and TR2 gears varying between areas. Beam trawl (BT2) effort is also very significant in the North Sea. The extent of unregulated effort varies between areas. However, this is associated with minimal cod catches; effort associated with Article 11 is relatively low in all areas, effort associated with Article 13 ranges from 25% to 75% between areas

Efficiency: At a fleet and vessel level, reductions in effort may not necessarily result in commensurate reduction in revenue as business will be incentivized to maximize revenue from available effort. Costs at a fleet level have fallen in line with effort, but have increased at an individual vessel level. Meta analysis can mask significant changes at an individual business level. Therefore, to understand the implications at an individual business level more detailed analysis would be required. According to a sociological study, based on a small sample of interviewed fishers, employment has

gone down. Additionally results from economic studies show that employment has fallen.

There have been positive contributions under Article 13c which appears to provide benefits towards achieving the cod plan targets. Article 13 allows a flexible, locally tailored response which should provide better governance with measures based directly on landings and discards. Notable effects are: redistribution of effort away from higher abundance in Kattgat; discard reductions in the northern North Sea by TR1 vessels; the use of more selective gears, and cod avoidance through real time closures. However, the verification aspects of Article 13 are too complex.

The Workshop identified a range of aspects to be considered with any revision including inter alia:-

Substitute alternative metrics for TACs. Consideration of multiannual metrics for informing decisions. Account for mixed fisheries as potential implementation error. Fishing morality should not be expected to follow trends in fishing effort. Exemptions through Article 11 should only be approved when the fishing activity is deployed outside the distribution area of cod, or if deployed within the cod distribution area, when the used fishing gear is designed and confirmed to minimize cod catches. Cod catches lower than a certain % (as in Articles 11 and 13.2b) can still contribute significantly to overall cod mortality if overall catch or effort is high or when abundance is low. This is a fundamental flaw in the design of the plan. A system based on proportion of total expected cod outtake from the whole fishery would be more appropriate. Basing monitoring on percentage composition (as in Articles 11 and 13) provides a disincentive to improve selectivity for other species as reducing overall catch can increase the percentage of cod even if cod catches are constant.

Clarification of NS whiting advice:

The probability of the stock going below the lowest level in the time series, is already low ~6-7% at $F=0.3$. Simulations at a constant fishing mortality rate of 0.25 in the long term had a lower <5% probability of reduced biomass during the recruitment regime changes. A 33% reduction to 0.2 during periods of low recruitment provide additional protection over a long term target of $F=0.3$ which would be useful if recruitment were to decline below the levels previously recorded. It reduces the 6% probability of low SSB associated with 0.3 alone.

The best estimate of the level for low recruitment is when the geometric mean of the recent 4 years recruitment falls below 1250000 at age 1, higher values increase the risk of false alarms while giving little extra protection.

A proportionate reduction below an agreed threshold down to the lower level discussed in would be appropriate and allow an increase in mortality rates as recruitment recovers. More rapid reduction provides little extra protection and could lead to unnecessarily larger fluctuations in F if or when false detections of low recruitment occur.

If the ~6-7% level of risk associated with fishing over the long term at 0.3 is not acceptable, reducing the target to 0.25 and not adjusting for low periods of recruitment (except where recruitment declines below the recorded values) would have a low risk of SSB declining to low abundance; there is an associated small loss of yield at lower fishing mortality rate. This strategy also avoids potential false alarms triggered by noise and retrospective bias currently associated with the estimation of whiting in the North Sea and Skagerrak recruitment abundance.

