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REPORT FROM THE COMMISSION TO THE COUNCIL
on the selectivity in trawl fisheries for cod in the Baltic Sea

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1. AIM AND INTRODUCTION

Article 7 of Council Regulation (EC) No 2187/2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the Sound requests the Commission to present to the Council "(...) *on the basis of the opinion of the Scientific, Technical and Economic Committee for Fisheries (...), an assessment of the selectivity on cod of active gears for which cod is recognised as target species.*". According to the scope of Article 7, only gears used in trawl fisheries are covered.

The assessment concerns trawls, Danish seines and similar gear with a mesh size $\geq 105\text{mm}$ with either a Bacoma exit window or a T90 codend (in which the mesh in the codend and extension piece is turned 90°); those being the two selectivity systems used in the Baltic cod fishery. Detailed descriptions of both gear attachments are specified in the appendix of the abovementioned Regulation.

The assessment was conducted by the International Council for the Exploration of the Sea (ICES)¹. The Scientific, Technical and Economic Committee for Fisheries (STECF)² was invited to give its opinion on the assessment. The present report offers a summary of ICES' and STECF's advice, as well as a comparison of the selectivity of the T90 codend and the Bacoma exit window. It also provides the *rationale* for increased selectivity, a first set of suggestions on how this could be achieved, and a way forward.

2. ICES AND STECF CONCLUSIONS AND RECOMMENDATIONS

ICES concludes that both designs by Bacoma and the T90 are indeed selective and give retention length ($L_{50} = 50\%$ of the fish of this length will be retained in the net) equivalent to the current Minimum Landing Size (MLS) for cod of 38 cm. There is no clear evidence of discrepancy in the selectivity between the two gears. Additional remarks from ICES concern advantages and disadvantages of the two gears in terms of practicality, perceived benefits in fish quality or fuel efficiency. ICES also recommends additional studies and analysis.

STECF supports ICES' findings and concludes that it has not been possible on basis of the available information to answer the question whether the Bacoma and the T90 trawls have similar selectivity properties or not. STECF also notes that "*the current exploitation pattern on cod of the trawl fishery allows the exploitation of immature cod. This results in a suboptimal utilisation of the cod stocks in the Baltic. An improved exploitation pattern with reduced mortality on juveniles will not only provide for higher yields but also contribute to the recovery of the eastern cod stock. Therefore STECF recommends that measures resulting in an improved exploitation pattern for Baltic cod be considered.*"

¹ ICES, 8,3,3,3 (2007). ICES response to EU on selectivity of active gears targeting cod in the Baltic Sea.

² STECF (2008) Commission staff working paper: Scientific, Technical and Economic Committee for Fisheries advice on selectivity of active gears targeting cod in the Baltic Sea

3. DETAILED ANALYSIS OF THE ASSESSMENT

3.1. Selectivity

Conclusions on selectivity are based on an earlier analysis carried out by ICES³, due to lack of recent studies on selectivity, especially on Bacoma. ICES however takes into account preliminary results from two recent Polish and German studies on selectivity, mainly conducted on T90⁴.

According to ICES' conclusions, both Bacoma windows and T90 codend give L50 of 38-40 cm, which is equivalent to the MLS for cod of 38 cm. For T90, the preliminary analysis of the German and Polish data give L50s of ~ 41cm and selection ranges of 4.8 to 6.5 cm. Overall, no difference in selectivity between the two gears could be detected, but nevertheless, it could not be excluded.

3.1.1. *Role of number of meshes in the cod end circumference*

The earlier analysis made by ICES uses old data sets on T90 codends. The majority of those data sets were obtained from experiments using codends with a higher number of meshes in circumference than the current legal maximum of 50. However, a modelling analysis recently carried out in Denmark⁵ and other scientific reports indicated that codend circumference has a major bearing on selectivity regardless of whether the codend is constructed in standard diamond mesh or T90. A reduction in the number of meshes in the codend circumference dramatically increased selectivity. It is therefore plausible that the selectivity of the T90 codend determined from the earlier analysis (with higher number of meshes) underestimates the current selectivity for T90. The recent studies carried out by Poland and Germany on T90 as stated above support this theory.

3.1.2. *Role of volume of catch and catch composition*

Volume of catch and catch composition can influence the selectivity of Bacoma and T90 gears respectively. There are indications both from observers and fishermen that the current Bacoma window works relatively well when catches are smaller than approximately two tonnes per haul. When the catches are larger and especially when they are dominated by cod around the minimum landing size, the size-selective properties turn to an unsatisfactory result. This is in line with previous studies and is related to the size of the Bacoma window.

For the T90, codend studies indicate that the selectivity is not so dependent on volume of catch but more on catch composition. A high concentration of flatfish in the codend decreases

³ ICES (2004) Report of the ICES-FAO Working group on Fishing technology and fish behaviour (WGFTFB), 20-23 April 2004, Gdynia, Poland. ICES CM 2004/B:05.189 pp; ICES (2005) Report of the ICES-FAO Working group on Fishing technology and fish behaviour (WGFTFB), 18-22 April 2005, Rome, Italy. ICES CM 2005/B:04.283 pp

⁴ Moderhak W., 2007. Selectivity in trawl fisheries for cod – assessment of the selectivity on cod of active gears for which cod is recognised as target species according to Article 7 of Council Regulation (EC) No 2187/2005. Communication from Poland to European Commission. 16th August 2007.
Wienbeck H., 2007. 579 Cruise Report of FRV Solea from 7/9/2007-28/9/2007. Institute for Fishery Technology & Fishery Economics, Hamburg, Germany. In prep.

⁵ Herrmann B., Priour D., and Krag L.A., 2007. Simulation-based study of the combined effect on cod-end size selection of turning meshes by 90° and reducing the number of meshes in the circumference for round fish. Fisheries Research 84 (2007) 222-232.

the selective property of the net for cod. Therefore ICES recommends that complimentary technical measures, such as real time closure in areas with high concentrations of flatfish or undersized cod, be considered.

3.1.3. Minimum Landing Size (MLS)

Both gear options, Bacoma and T90, give L50s equivalent to the MLS for cod of 38cm.

At present L25 (25% of the fish of this length will be retained in the net) coincides with a length of cod in the range of around 35-38 cm for both Bacoma and T90 which would be a more selective management objective.

3.1.4. Discarding

The estimated amount of discards from all fisheries on both the Western and Eastern Baltic cod stocks is provided by ICES' Working Group on Baltic Fisheries Assessment (WGBFAS). According to their latest report⁶, discarding increased from 1600 tons in 2005 to over 4000 tons per year in 2006 and 2007. ICES considers that the likely cause of this increase in discards is the strong year classes of 2003 and 2005, which joined the catchable stock but was just above the MLS.

The discard rate for the Baltic cod is now estimated to be around 10% of the catch by weight. An increased selectivity would reduce this percentage and provide for improved recovery of the stocks and higher yields.

3.2. Additional aspects

3.2.1. Acceptance among fishermen

From all available information there seems to be a clear dichotomy in the preference for gears between Member States:

- Danish and Swedish fishermen clearly prefer to use the Bacoma window;
- Fishermen from other Member States, particularly Poland and Germany, consider the T90 codend as the more attractive alternative.

It seems as though neither option is perfect in optimising catches or minimising discards, and both are more acceptable for fishermen than a simple mesh size increase.

3.2.2. Gear attachments

Under Article 5 of Council Regulation (EC) 2187/2005, several legal gear attachments are described that may have an adverse effect on selectivity or can be rigged in an illegal manner to restrict mesh opening. The use of bottom side chafers, large “rescue” floats attached to the codline, flappers and round straps, may have an effect on selectivity depending on how they are rigged. The continued need for such attachments for strength and safety reasons should thus be balanced against their negative effects on selectivity.

⁶ ICES CM 2008 / ACOM : 06

3.3. Follow-up studies recommended by ICES and STECF

ICES and STECF recommend carrying out studies in order to increase knowledge of and clarify the difference between Bacoma window and T90 codend. The list of studies proposed is as follow:

- Structured experiments specifically designed to compare selectiveness between T90 codends and Bacoma windows and to evaluate the effect of twine thickness, codend circumference and mesh size;
- Studies on selectivity with increasing catch size and catch composition with both Bacoma and T90 codends;
- Investigation of the potential for complimentary technical measures such as real-time or area closures in the Baltic;
- Proper review of the potential impact of circumvention through Member States' information;
- Review of the current regulations regarding permissible gear attachments e.g. chafers, rescue floats etc. in order to establish whether there is a continued need for their use.

4. COMMISSION'S CONCLUSIONS

The Commission is of the opinion that although discard rates are comparatively low in the Baltic cod trawl fishery, there is scope for increased selectivity and other measures to reduce discards. Taking into account the STECF recommendation that "*measures resulting in improved exploitation pattern for Baltic cod be considered*", the Commission would like to explore the possibility of increasing selectivity in the Baltic cod trawl fishery and avoid discards.

The Commission sees the current positive trend in the Baltic eastern cod stock as an opportunity to increase selectivity without heavy economic losses for the Baltic fishing industry. The semi-enclosed Baltic Sea with its dominantly single species fisheries also constitutes a suitable candidate for a fully-embraced ecosystem approach management with significantly reduced discard levels of both commercial and non-commercial species. The medium and longer-term effects of such approach should be higher catch quotas and ecologically and economically healthier fisheries.

Recently the Commission has gained support from the Baltic Sea RAC^{7, 8} (BSRAC) for reducing discards and improving selectivity in the Baltic Sea. The Commission recognises that there are many possible measures for this approach including expanded Bacoma windows, increased mesh size in T90, increased mesh size in Bacoma window, increased mesh size overall, reduced number of meshes in the codend circumference, pilot scheme for juvenile cod avoidance, real time closures etc. The Commission welcomes further initiatives from Member States and the Baltic Sea RAC in this context and will arrange meetings with Member States and the Baltic Sea RAC to discuss pilot projects that would evaluate different

⁷ BSRAC (2008) Recommendations on the fisheries for Baltic Sea fish species in 2009

⁸ Baltic Sea RAC (2008) Comments on the Commission's consultation paper on discards

measures. The Commission will consider the results of pilot projects for reduction of discards and improved selectivity, suggest objectives and possibly new regulatory measures, if and when considered necessary.

In this context, the Commission would like to point out that Council Regulation (EC) No. 1198/2006 of 27 July 2006 on the European Fisheries Fund, provides several provisions that may be used by Member States for the purpose of increasing selectivity. Some examples are changes of fishing gear, aid for equipment to reduce the impact on non-commercial species, aid for smaller vessels to improve the management and control of access to certain fishing areas and aid for collective actions such as pilot projects. The Commission therefore invites Member States to use the existing means for promotion of pilot projects to improve selectivity in the Baltic cod fisheries.