Additional Request On North Sea Herring Long Term Management Plan Evaluation

Ir. N.T. Hintzen

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IMARES Wageningen UR

(IMARES - Institute for Marine Resources & Ecosystem Studies)

Client: Pelagic Freezer-trawler Association (PFA)
T.a.v. Gerard van Balsfoort
P.O. Box 72
2280 AB Rijswijk

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P.O. Box 68
1970 AB IJmuiden
Phone: +31 (0)317 48 09 00
Fax: +31 (0)317 48 73 26
E-Mail: imares@wur.nl
www.imares.wur.nl

P.O. Box 77
4400 AB Yerseke
Phone: +31 (0)317 48 09 00
Fax: +31 (0)317 48 73 59
E-Mail: imares@wur.nl
www.imares.wur.nl

P.O. Box 57
1780 AB Den Helder
Phone: +31 (0)317 48 09 00
Fax: +31 (0)223 63 06 87
E-Mail: imares@wur.nl
www.imares.wur.nl

P.O. Box 167
1790 AD Den Burg Texel
Phone: +31 (0)317 48 09 00
Fax: +31 (0)317 48 73 62
E-Mail: imares@wur.nl
www.imares.wur.nl

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Summary

Under the current Long Term Management Plan of North Sea herring the stakeholders are concerned that the inter-annual TAC constraint is preventing the stock from being exploited at the maximum sustainable yield. Therefore, ICES was requested by the EU and Norway to evaluate, by 31 October 2011, the impact on the performance of the plan in relation to the objectives of providing sustainable fisheries with stable yield in conformity with the precautionary approach under different TAC setting options. In addition a number of potential adjustments to the plan were evaluated. These HCRs and plan adjustments were discussed at the Workshop on Herring Interim Advice on the Management Plan (WKHIAMP) on the 24th of October.

Based on the outcomes of the workshop, Gerard van Balsfoort from the PFA has requested two additional adjustments to the plan to be evaluated. This document describes the results of the additional two options and shows that both are precautionary and perform at an intermediate level compared to the five options already evaluated within WKHIAMP. The average yield under these two options are slightly higher than the 50-50 HCR but they have this at the expense of TAC stability which is slightly lower.

1 Introduction

Under the current Long Term Management Plan of North Sea herring the stakeholders are concerned that the inter-annual TAC constraint is preventing the stock from being exploited at the maximum sustainable yield. Therefore, ICES was requested by the EU and Norway to evaluate, by 31 October 2011, the impact on the performance of the plan in relation to the objectives of providing sustainable fisheries with stable yield in conformity with the precautionary approach under different harvest control rules (HCRs). In addition a number of potential adjustments to the plan were evaluated. These HCRs and plan adjustments were discussed at the Workshop on Herring Interim Advice on the Management Plan (WKHIAMP) on the 24th of October.
Based on the outcomes of the workshop, Gerard van Balsfoort from the PFA has requested two additional adjustments to the plan to be evaluated. This document describes the results of the additional two options.

2 Materials and Methods

The methods and procedures followed to evaluate the requested additional options are exactly the same as those for the analyses within WKHIAMP (ICES 2011). Only the TAC setting procedure, as described below, has been adjusted to fit the request.

The full model and analyses description can be found under chapter 4 of the WKHIAMP report (ICES 2011).

Options are numbered 6 and 7, following continuous numbering from the options given in the WKHIAMP report (ICES 2011, section 4.1.2).

2.2 *Option 6: 25–75 + 50-50 HCR*

In 2012 the TAC is set according to the agreed TAC in 2011 and the TAC calculated based only on the target F from the HCR in 2012 (preliminary TAC), weighted 25-75%. In 2013, the TAC is again set according to the agreed TAC in 2012 and the TAC calculated based only on the target F from the HCR in 2013 (preliminary TAC), with the same 25-75% weighting. For all other years, the TAC is set at the average of the preliminary TAC and the agreed TAC the previous year using equal weights (50-50%) for both years. In other words, the 25-75 rule is applied in 2012 and 2013 and the 50-50 rule for all other years.

2.3 *Option 7: 0-100 + 50-50 HCR*

In 2012 the TAC is set calculated based only on the target F from the HCR in 2012 (preliminary TAC). For all other years, the TAC is set at the average of the preliminary TAC and the agreed TAC the previous year using equal weights (50-50%) for both years. In other words, the preliminary TAC is used for 2012 and the 50-50 rule for all other years.

3 Results

3.1 *Option 6: 25–75 + 50-50 HCR*

This option was evaluated to be in conformity with the precautionary approach (no more than 5% of 10-year simulation runs having one or more years outside safe biological limits). The landings trajectory shows what seems to be a compromise between the current HCR (Option 1) and option 2, 3, 5 (see

WKHIAMP report) and 7 in which no constraint is applied on the TAC change in the first year (which results in a large step up in the first year). Instead, during the first few years, landings increase gradually, but more rapidly compared to option 3, to a peak of around 430 000 tonnes in 2014, after which they gradually decrease again. The fishing mortality peaks in 2016 around 0.26 and then declines slowly. It does not increase by the same amount in the first year as in Options 2, 3 and 5, but it does increase more quickly than in the current HCR (Option 1) and the 50-50 HCR (Option 4). The SSB initially increases to around 1.7 million tonnes in 2013 and then gradually declines to just below 1.4 million tonnes in 2020.

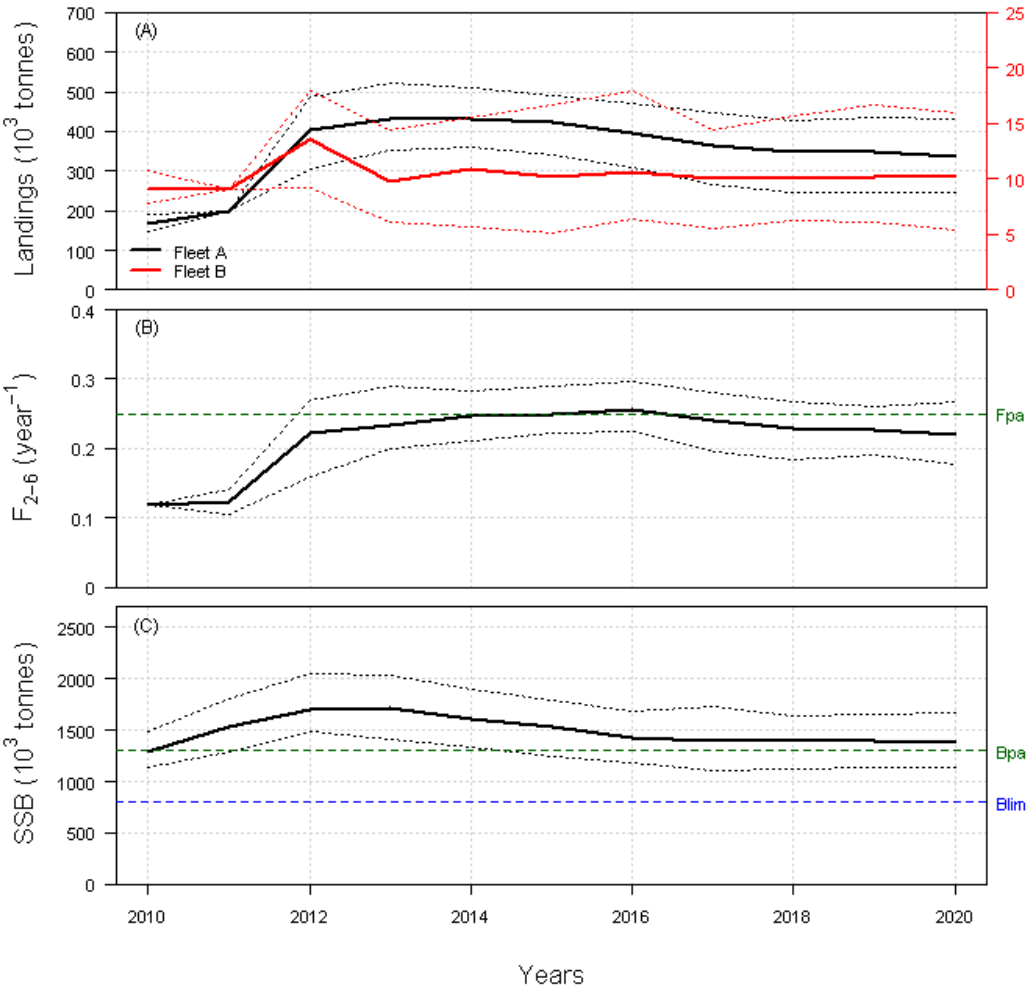

Figure 1: 25-75 + 50-50 HCR: Landings by fleet A and B (panel A), F_{2-6} (panel B) and SSB (panel C) trajectories given 100 Monte Carlo simulations.

3.2 *Option 7: 0–100 + 50-50 HCR*

This option was evaluated to be in conformity with the precautionary approach. The trajectories are very similar to Options 2, 3 and 5. Relaxation of the constraint happens in the first year and, consequently, landings increase rapidly in 2012 (Figure 2a), then decline slowly to stabilise around 340 000 tonnes from 2017 onwards. Fishing mortality follows a similar trend, rising considerably in the first year and then declining from values slightly above 0.25 to 0.22 in 2020. The SSB peaks at about 1.7 million tonnes in 2012 to stabilise just below 1.4 million tonnes from 2016 onwards.

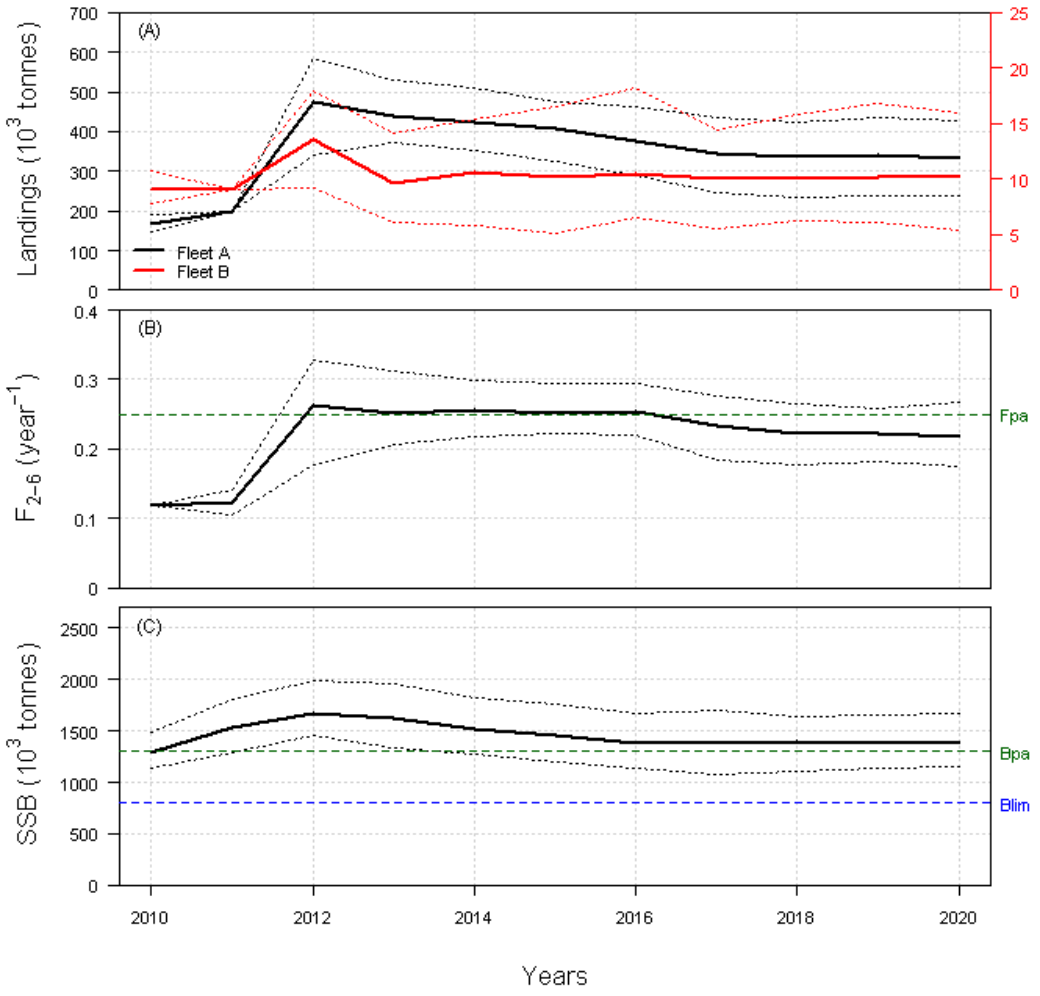

Figure 2: 0-100 + 50-50 HCR: Landings by fleet A and B (panel A), F_{2-6} (panel B) and SSB (panel C) trajectories given 100 Monte Carlo simulations.

3.3 *Comparison of performance indicators*

Table 1 as shown in the WKHIAMP report is adjusted here to fit the two additional options 6 and 7. It is compared with the current Long Term Management Plan (Option 1) and the 50-50 rule (Option 4).

Table 1: Performance indicator overview for all options. Indicators are classed into four groups (Precautionary Approach, Stock Performance, High Yield and Stable Yield) and are judged against these criteria. The four indicators that best represent these four criteria are shaded. Within each of the shaded indicators, among the four HCRs compared here, dark blue represents lower performance while light blue represents the best performing option. The intermediate blue shades represent the intermediate performing HCR options evaluated where the darker colours correlates to lower performance. Note that option 2,3 and 5 of the WKHIAMP report do not play a role in the shading determination below.

	Current HCR	50-50 HCR	25-75 HCR in 2012, 2013	50-50 HCR from 2013
Percentage of Monte Carlo simulations below Blim (PA)	0	0	0	0
SSB in 2020	1 499 613	1 383 836	1 386 914	1 392 218
F_{2-6} in 2020	0.237	0.226	0.22	0.217
Mean F_{0-1}	0.034	0.036	0.037	0.037
Mean F_{2-6}	0.183	0.22	0.227	0.232
Mean SSB	1 789 355	1 557 392	1 515 903	1 484 108
Mean Yield fleet A	346 153	364 387	366 153	367 495
Mean Yield fleet B	10 994	10 702	10 659	10 635
Yield fleet A in 2012	230 000	336 840	405 260	473 680
Yield fleet B in 2012	13 503	13 503	13 503	13 503
Mean % absolute TAC change fleet A (see Section 4.1.3 text for formula)	11.759	12.543	12.674	14.213
Mean change (tonnes) in TAC fleet A	41 072	45 033	49 661	56 845
Percentage of Monte Carlo simulations with 15% invoked	60	0	0	0
Mean change TAC fleet A if increase	40 993	57 524	73 496	93 975
Mean change TAC fleet B if decrease	42 742	31 603	32 403	36 607

4 Conclusions

Both options are compatible with the precautionary approach, as the risk of SSB falling below B_{lim} is always low under the assumed conditions.

The differences among option 4 (50-50 HCR, see WKHIAMP report, ICES 2011) and the 25-75 HCR (option 6) and 0-100 HCR (option 7) options are small, with slightly higher catches in the A fleet for options 6 and 7 at the cost of stability, indicating a slightly reduced stability.

5 Quality Assurance

Two independent experts have, in an assignment by ICES, reviewed the WKHIAMP work to guarantee the quality of the analyses.

IMARES utilises an ISO 9001:2008 certified quality management system (certificate number: 57846-2009-AQ-NLD-RvA). This certificate is valid until 15 December 2012. The organisation has been certified since 27 February 2001. The certification was issued by DNV Certification B.V. Furthermore, the chemical laboratory of the Environmental Division has NEN-AND-ISO/IEC 17025:2005 accreditation for test laboratories with number L097. This accreditation is valid until 27 March 2013 and was first issued on 27 March 1997. Accreditation was granted by the Council for Accreditation.

References

ICES. 2011. Report of the Workshop on Herring Interim Advice on the Management Plan (WKHIAMP). ICES CM 2008/ACOM: (in press).

Justification

Rapport number: C142.11

The scientific quality of this report has been peer reviewed by the a colleague scientist and the head of the department of IMARES.

Approved: Dr. David Miller
scientist

Signature: 

Date: 10 November 2011

Approved: Tammo Bult
Head of the department fisheries

Signature: 

Date: 10 November 2011