Annex 7 – Technical Minutes of the Sandeel Review Group


Dates: 4 - 10 May 2011
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General

The shift from a North Sea assessment to providing assessments at the area level is an improvement but in agreement with the 2010 review a full comparison between SMS-effort and SXSA still needs to be carried out.

The model assumes a linear relationship between F and fishing effort and this is providing stability to the assessment. Separable periods are assumed but no justification for the choice of periods is provided. Further, it is not clear from the stock annex how the “F, season effect” and the “F, age effects” or age catchability, are estimated.

References to the Stock Annex were appropriate but (initially) the Stock Annex was nowhere to be found. The data were used as specified in the Stock Annex. Generally, assessments and forecasts were conducted according to the Stock Annex.

There are small errors in the report (the text listed below is the correct one):

- Figure 4.1.2, Management Areas should be shown overtop of ICES triangles
- Section 4.1.5, Total landings in 2010 are not reported in the Annex and graphs there need to be updated?
- Section 4.2.10, Short-term forecast (Area-1) it is 2011 TAC;
- Section 4.3.5, tuning series, 2nd line: survey in area 2 was initiated in 2010.
- Section 4.4.10, input, 1st line: is given in Table 4.4.10.
- Figure 4.2.8 (caption). The assessment provides an estimate of 2010 recruitment (age 0 in 2010) why is it a random number?

NOTE that the neither the assessment nor the forecasts were carried out by this review."

The Review Group considered the following stocks:

- Sandeel in IV: by area (Area-1 to Area-7).

And the following special requests:

- n/a
Sandeel in IV (WGNSSK Feb 2011)

The total sandeel stock is divided in several sub-populations. The North Sea is divided into seven sandeel assessment areas. Analytical assessments were only carried out for Areas -1 to 3.

Sandeel in Area-1

The SMS-effort model was used to estimate fishing mortalities and stock numbers at age by half year, using data from 1983 to 2010. In the SMS model it is assumed that fishing mortality is proportional to fishing effort.

1) **Assessment type:** update
2) **Assessment:** analytical
3) **Forecast:** presented
4) **Assessment model:** SMS-effort, dredge survey used to tune the assessment.
5) **Consistency:** The assessment model is based on a recent benchmark (WKSAN, 2010). Historic retrospective to assess consistency between this year’s assessment and 2010 not presented.
6) **Stock status:** B>Bpa, there are no F reference points for this stock, estimated recruitment in 2010 is the second lowest in the time series.
7) **Man. Plan.** There is no agreed Management Plan for this stock.

General comments

This section is clearly documented, references to figures and tables are appropriate.

Technical comments

The fit to the catch-at-age data is poor as noted in the report with clusters of negative and positive residuals. The residuals from the fit to the dredge survey also show some patterns and some of the residuals are quite large particularly for age 1. Given that the time-series is short at the very least we can say that the survey is probably very noisy. Plots of the observed and model predicted for both the catch-at-age and survey time-series would help to visualize how the model is fitting the data.

For the parameterization of \( F \), the stock annex considers separable periods 1983-98 and 1999-2009 while this year’s assessment uses 1983-88, 1989-98 and 1999-2010, reasons for the change should be provided.

Conclusions

The assessment and the short-term forecast appear to have been performed correctly. The assessment provides a sound basis for advice.

Sandeel in Area-2

The SMS-effort model was used to estimate fishing mortalities and stock numbers at age by half year, using data from 1983 to 2010. The dredge survey in Area-2 is too short for assessment purposes. The catch rate indices of age group 0 from the dredge survey in Area-1 were used to calibrate the assessment of Area-2.

1) **Assessment type:** update
2) **Assessment:** analytical
3) **Forecast:** presented
4) **Assessment model:** SMS-effort, dredge survey in area-1 used to tune the assessment.

5) **Consistency:** The assessment model is based on a recent benchmark (WKSAN, 2010). Historic retrospective to assess consistency between this year’s assessment and 2010 not presented.

6) **Stock status:** $B > B_{pa}$, there are no $F$ reference points for this stock, estimated recruitment in 2010 is around one quarter of the long term mean.

7) **Man. Plan.:** There is no agreed Management Plan for this stock.

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General comments

This section is clearly documented and references to figures and tables are appropriate.

Technical comments

The residuals from the dredge survey are moderate and showing no patterns. However, the fit to the catch-at-age show very large residuals as well as clusters of negative and positive residuals particularly for season 2 suggesting violation of the separability assumptions. This could be biasing model estimates of $SSB$.

Uncertainty in $SSB$ as reflected by the 95% confidence intervals is large in the most recent year and the lower interval is just above $B_{lim}$. This should be taken into account in the advice.

Sandeel in Area-3

The SMS-effort model was used to estimate fishing mortalities and stock numbers at age by half year, using data from 1983 to 2010. The dredge survey in Area-3 was used to calibrate the assessment. However, the survey only covers the southern part of area 3, implications for the assessment are not discussed.

1) **Assessment type:** update

2) **Assessment:** analytical

3) **Forecast:** presented

4) **Assessment model:** SMS-effort, dredge survey used to tune the assessment.

5) **Consistency:** The assessment model is based on a recent benchmark (WKSAN, 2010). Historic retrospective to assess consistency between this year’s assessment and 2010 not presented.

6) **Stock status:** $B > B_{pa}$; no $F$ reference points defined. Recruitment below the long term mean

7) **Man. Plan:** There is no agreed Management Plan for this stock.

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General comments

This section is clearly documented and references to figures and tables are appropriate.

Technical comments

Reference to figure 4.4.4 related to internal consistency by age of the dredge survey is not clear, as $R^2$ is relatively similar for both regressions presented. The solid symbols may correspond to the most recent survey but that should be stated in the caption.
Showing both ages in the same plot makes visualization of the individual relationships difficult.

Very poor fit to the catch-at-age data with clusters of negative and positive residuals, separability assumptions seem violated. The CV corresponding to the dredge survey is very high for age 1 which suggests that the dredge survey may not be a good predictor of the incoming year class. The indication of the WG to continue using in-season monitoring in this area seems appropriate.

The confidence intervals about the recent SSB are very wide and include B_{min}; the short-term forecast show that SSB in 2012 will be substantially below B_{msy} trigger even in the case of zero catch.

**Sandeel in Area-4**

1) **Assessment type:** update

2) **Assessment:** effort and cpue trends presented; abundance indices by age group from dredge surveys. Robust estimates of the incoming year class not available.

3) **Forecast:** not presented

4) **Assessment model:** not carried out.

5) **Consistency:** not applicable

6) **Stock status:** unknown. The 2009 year class seemed strong but 2010 year class seems low (based on dredge survey cpue).

7) **Man. Plan:** There is no agreed Management Plan for this stock.

Dredge hauls covering the major sandeel banks were taken in 1999-2003 and 2008-2010. Sample sizes were low. A dedicated recruit survey was put in place in 2008 but data analysis has shown that the gear is unsuitable for estimating absolute numbers of 0-group. However, the regression of catch rates of age 0 and subsequent age 1 suggests consistency but the time-series is still too short for the results to be used for management.

The TAC advice of 5 to 10 thousand tonnes for area-4 seems much too high compared to recent ICES landings (Table 6.4.21.4.1).