Annex 4: Audits

1 Audit of Norwegian spring spawning herring (her.27.1-24a514a)

Date: 05.09.2022
Auditor: Afra Egan, Anna Olafsdottir, Axelle

General
The Norwegian springs-pawning herring is carried out using the XSAM model. This audit focuses on input data for the assessment and the WGWIDE report chapter.

For single stock summary sheet advice:

1) **Assessment type:** update/SALY
2) **Assessment**: analytical
3) **Forecast**: presented
4) **Assessment model**: XSAM with 3 survey fleets
5) **Data issues:** 2022 assessment input data are available on SharePoint in the folder "07.Software – 2022_her.27.1-24a514a_assessment".

Input data files were checked against the working group report tables
Data were the same in tables except for 2 instances:

Table 4.4.3.1 Catch numbers at age for 2020 differ from the input file – correction done.
Table 4.4.4.1 Mean weights in the catch at age 1 does not match the input file (not used in the assessment)

The only available catch data from Russian Federation for 2021 was total catch by ICES division from ICES preliminary catch database, and no Russian catch samples were available. Historically, preliminary catches are comparable to ICES final estimated catch. There were adequate samples from other fishing nations operating in the same areas which were used to estimate catch at age and weight at age.

6) **Consistency**: This years' assessment is consistent with last years' assessment and the WG accepted the assessment.
7) **Stock status**: The fishing pressure on the stock is above F_{MSY}, and Fpa (but below F_{lim}). Spawning-stock size is above MSY $B_{trigger}$, B_{pa}, and B_{lim}.
8) **Management Plan**: Agreed by the Coastal States in October 2018: the TAC shall be fixed to a fishing mortality of Fmgt = 0.14, with a constraint of maximum 20% reduction and 25% increase relative to the TAC in the preceding year. If SSB is forecast to be lower than MSY $B_{trigger}$ in the beginning of the quota year, F decreases linearly from F_{mgt} to F = 0.05 over the biomass range from $B_{trigger}$ to B_{lim}. The long-term management strategy has been evaluated by ICES and found to be consistent with the precautionary approach.

General comments
The input data and assessment are documented as described in the stock annex and the report sections are well ordered. A table summarising the assessment settings in the stock annex would be useful and would make the audit easier.

The advice sheet was clearly and concisely written. Numbers and tables in the advice sheet were compared to the same information in the report and rounding differences highlighted and comments forwarded to the responsible person.

Technical comments
To the best of our knowledge, the assessment has been performed correctly according to the stock annex.

Table and figure numbers and references to them in the text have been checked.

Conclusions
The assessment has been performed correctly

Checklist for audit process

General aspects

- Has the EG answered those TORs relevant to providing advice? yes
- Is the assessment according to the stock annex description? I think so?
- If a management plan is used as the basis of the advice, has been agreed to by the relevant parties and has the plan been evaluated by ICES to be precautionary? yes
- Have the data been used as specified in the stock annex? yes
- Has the assessment, recruitment and forecast model been applied as specified in the stock annex?
- Is there any **major** reason to deviate from the standard procedure for this stock? no
- Does the update assessment give a valid basis for advice? If not, suggested what other basis should be sought for the advice? yes

Audit of Western Horse Mackerel data and assessment

Date: 07/09/2022

Auditor: Alessandro Orio, Sólvá Káradóttir Eliasen, Eleanor MacLeod, Richard Nash

General

Western horse mackerel is assessed as a Category 1 stock. An SS3 model is run to determine the state of the stock in relation to reference points for western horse mackerel.

For single stock summary sheet advice:

9) **Assessment type:** update
10) **Assessment**: analytical.
11) **Forecast**: presented
12) **Assessment model**: SS3 model with commercial catches (length and age data) and three survey indices: Triennial egg survey index (1992–2019); IBTS recruitment index; PELACUS acoustic biomass.
13) **Data issues:** No data issues.
14) **Consistency**: The view of the WG was that the assessment should be accepted. The Stock annex needs to be updated for the F and M before spawning used in the forecast (assumed at the beginning of the year in the current forecast) and for the new F_{pa} value due the changed basis.
15) **Stock status**: Fishing pressure on the stock is above F_{MSY} and between F_{pa} and F_{lim}; spawning-stock size is below MSY $B_{trigger}$, B_{pa} and B_{lim}.
16) **Management Plan**: No management plan

General comments

The assessment and forecast have been available for review. Input and output data were correct. A few inconsistencies were found in the advice sheet but these have been already corrected.

Technical comments

Few inconsistencies are present in the stock annex. F and M before spawning in the forecast needs to be updated in the stock annex since in the forecast the spawning time is assumed to happen at the beginning of the year. The section on reference points needs to be updated with the new F_{pa} due to the change of basis.

A thorough revision of the number of samples used for the different age and length frequency distributions in the assessment is suggested for the next benchmark iteration. There is a need to inspect the potential problems caused by the reweighting of both age length keys and age frequency distribution of the commercial catches using the same parameter. The fishing mortality estimated by the model is weighted by the population numbers but now the unweighted F can be obtained so it would be preferable to switch to that in the future to avoid extra calculations. Forecasts run directly in SS should be also considered during the next benchmark.

There are four tables in the tables section to which there, in the text section, are no references (Tables 7.2.4.3 – 7.2.4.6).

Conclusions

The assessment has been performed correctly.

Checklist for audit process

General aspects

- Has the EG answered those TORs relevant to providing advice?

Yes

- Is the assessment according to the stock annex description?
  Yes but it needs to be updated
- If a management plan is used as the basis of the advice, has been agreed to by the relevant parties and has the plan been evaluated by ICES to be precautionary?
  Yes, no management plan
- Have the data been used as specified in the stock annex?
  Yes
- Has the assessment, recruitment and forecast model been applied as specified in the stock annex?
  Yes
- Is there any **major** reason to deviate from the standard procedure for this stock?
  No
- Does the update assessment give a valid basis for advice? If not, suggested what other basis should be sought for the advice?
  Yes.

2 Audit of the Blue whiting assessment (whb.27.1-91214)

Date: 01.09.2022

Auditor: Martin Pastoors, Leif Nottestad, Ed Farrell, Jessica Tingvall

General

The blue whiting assessment is carried out using the SAM model and available on Stockassessment.org (WHB-2022). This audit focuses on input data, assessment, forecast and draft advice document.

For single stock summary sheet advice:

17) **Assessment type: update/SALY**
18) **Assessment**: analytical
19) **Forecast**: presented; derived directly from the outputs of the SAM model. Appropriate settings according to Stock Annex.
20) **Assessment model**: SAM with 1 survey fleet
21) **Data issues:** Estimation of preliminary catch in 2022 difficult because of absence of Russian information. The tables in the report have been checked in relation to the input files used for the assessment and in relation with the tables in the advice summary.
22) **Consistency**: This years' assessment is consistent with last years' assessment, although there is very different outlook due to an incoming new year class. The WG accepted the assessment.
23) **Stock status**: The fishing pressure on the stock is above FMSY, FMGT and Fpa (but below Flim). Spawning-stock size is above MSY Btrigger, Bpa, and Blim.
24) **Management Plan**: Agreed by the Coastal States in October 2016 after evaluation of the management plan by ICES. The long-term management strategy was found to be consistent with the precautionary approach. However, the management plan was modified subsequent to the evaluation by ICES by including a clause to lift the limit on TAC change if the change was more than 40% (Clause 6). This modification has not been evaluated by ICES. Despite the agreement on the management plan by the Coastal States, the plan has not been effective due to a lack of agreement on the sharing of the TAC.

General comments

The input data and assessment are documented as described in the stock annex and the report sections are well ordered.

Technical comments

The code for the short term forecast is embedded in a large collection of code (_job_to_do_it_all.R) that is not running on stockassessment.org. If the stock is not being entered into TAF, it could be beneficial to at least include the forecast methodology directly on stockassessment.org. The text on the forecast in the stock annex needs updating as it is referring to code being available on stockassessment.org which is currently not the case.

Conclusions

The assessment has been performed correctly

Checklist for audit process

General aspects

- Has the EG answered those TORs relevant to providing advice? Yes.
- Is the assessment according to the stock annex description? Yes (in some cases the SA will need minor updates)
- If a management plan is used as the basis of the advice, has been agreed to by the relevant parties and has the plan been evaluated by ICES to be precautionary? The management plan has been agreed by the Coastal States in October 2016 after evaluation of the management plan by ICES. The long-term management strategy has been evaluated by ICES and was consistent with the precautionary approach. However, the management plan was modified subsequent to the evaluation by ICES by including a clause to lift the limit on TAC change if the change was more than 40% (Clause 6). This modification has not been evaluated by ICES. Despite the agreement on the management plan by the Coastal States, the plan has not been effective due to a lack of agreement on the sharing of the TAC.
- Have the data been used as specified in the stock annex? **Yes.**
- Has the assessment, recruitment and forecast model been applied as specified in the stock annex? **Yes.**
- Is there any **major** reason to deviate from the standard procedure for this stock? **No**
- Does the update assessment give a valid basis for advice? If not, suggested what other basis should be sought for the advice? **Yes**

Checking of Blue whiting report tables.

Green = checked and ok. NO highlight = can't find the source data. Yellow = potential issue

1. **Table 2.3.1.1. Blue whiting. ICES estimated catches (tonnes) by country for the period 1988–2021.**
2. **Table 2.3.1.2. Blue whiting. ICES estimated catches (tonnes) by country and ICES division for 2021.**
3. **Table 2.3.1.3. Blue whiting. ICES estimated catches (tonnes) by quarter and ICES division for 2021.**
4. **Table 2.3.1.4. Blue whiting. ICES estimated catches (tonnes) from the main fisheries 1988–2021 by area.**
5. **Table 2.3.1.5. Blue whiting. ICES estimates (tonnes) of catches, landings and discards by country for 2021.**
6. **Table 2.3.1.6. Blue whiting. ICES estimated catches (tonnes) inside and outside NEAFC regulatory area for 2021 by country.**
7. **Table 2.3.1.1.1. Blue whiting. ICES estimated catches (tonnes), the percentage of catch covered by the sampling programme, No. of age samples, No. of fish measured and No. of fish aged for 2000-2021.**
8. **Table 2.3.1.1.2. Blue whiting. ICES estimated catches (tonnes), the percentage of catch covered by the sampling programme (catch-at-age numbers), No. of length samples, No. of age samples, No. of fish measured,**

No. of fish aged, No. of fish aged by 1000 tonnes and No. of fish measured by 1000 tonnes by country for 2021.

9. **Table 2.3.1.1.3. Blue whiting. ICES estimated catches (tonnes), No. of Age samples, No. of fish measured and No. of fish aged by country and quarter for 2021.**

10. **Table 2.3.1.1.3. (continued) Blue whiting. ICES estimated catches (tonnes), No. of Age samples, No. of fish measured and No. of fish aged by country and quarter for 2021.**

11. **Table 2.3.1.1.3. (continued) Blue whiting. ICES estimated catches (tonnes), No. of Age samples, No. of fish measured and No. of fish aged by country and quarter for 2021.**

12. **Table 2.3.1.1.4. Blue whiting. ICES estimated catches (tonnes), the percentage of catch covered by the sampling programme, No. of length samples, No. of age samples, No. of fish measured, No. of fish aged, No. of fish aged by 1000 tonnes and No. of fish measured by 1000 tonnes by ICES division for 2021.**

13. **Table 2.3.2.1. Blue whiting. ICES estimated preliminary landings (tonnes) in 2022 by quarter and ICES division. Data submitted to InterCatch.**

14. **Table 2.3.2.2. Blue whiting. ICES estimated preliminary catches (tonnes), the percentage of catch covered by the sampling programme, No. of samples, No. of fish measured, No. of fish aged, No. of fish aged by 1000 tonnes and No. of fish measured by 1000 tonnes by ICES division for 2022 preliminary data (quarters 1 and 2). Data submitted to InterCatch.**

15. **Table 2.3.2.3. Blue whiting. ICES estimates of catches (tonnes) in 2022, based on (initial) declared quotas and expected uptake estimated by WGWIDE.**

16. **Table 2.3.2.4. Blue whiting. Comparison of preliminary and final catches (tonnes).**

17. **Table 2.3.3.1. Blue whiting. Catch-at-age numbers (thousands) by year. Discards included since 2014. Values for 2022 are preliminary.**

    a. From 2011 onwards the data file (cn.dat) numbers are given to a few decimal places which is not show in the report tables.
    b. There is a difference in how some of these decimals are rounded when at 0.5 in data. In some cases rounded up and in some rounded down.
        i. 2016 age 3 in data is 2933271.5 and 2933271 in table
        ii. 2018 age 9 in data is 90387.5 and 90387 in table
        iii. 2021 age 7 in data is 1360104.5 and 1360104 in table

18. **Table 2.3.4.1. Blue whiting. Individual mean weight (kg) at age in the catch. Preliminary values for 2022.**

    a. cw.dat. Checked. OK.

19. **Table 2.3.5.1. Blue whiting. Natural mortality and proportion mature.**

    a. From mo.dat. OK

20. **Table 2.3.7.1.1. Blue whiting. Time-series of StoX abundance estimates of blue whiting (millions) by age in the IBWSS. Total biomass in last column (1000 t). Shaded values (ages 1-8; years 2004-2022) are used as input to the assessment**

    a. survey.dat. OK

21. **Table 2.3.7.2.1. Blue whiting. Estimated abundance of 1 and 2 year old blue whiting from the International Ecosystem Survey in Nordic Seas (IESNS), 2003–2022.**

    Compare report table to table in BW_RecruitmentRank22.xls. There is one disagreement in the table in 2014. In the report age 1 and 2 in 2014 are 3893 and 2048 but in the xl table they are 3937 and 2030, respectively.

22. Table 2.3.7.2.2. Blue whiting. 1-group indices of blue whiting from the Norwegian winter survey (late January-early March) in the Barents Sea. (Blue whiting < 19 cm in total body length which most likely belong to 1-group.)

23. **Table 2.3.7.2.3. Blue whiting. 1-group indices of blue whiting from the Icelandic bottom-trawl surveys, 1-group (< 22 cm in March).**

24. **Table 2.3.7.2.4. Blue whiting. 1-group indices of blue whiting from Faroese bottom-trawl surveys, 1-group (<= 23 cm in March).**

25. **Table 2.4.1.1. Blue whiting. Parameter estimates, from final assessment (2022) and retrospective analysis (2018-2021).**

26. **Table 2.4.1.2. Blue whiting. Mohn's rho by year and average over the last five years (n=5).**

27. **Table 2.4.1.3. Blue whiting. Estimated fishing mortalities. Catch data for 2022 are preliminary.**

    a. The 2023 data is in the model output but not in the report table. Is this correct??

28. **Table 2.4.1.4. Blue whiting. Estimated stock numbers-at-age (thousands). Preliminary catch data for 2022 have been used.**

    a. The 2023 age 1 figure is missing from the report table but is in the model output table. Is this correct?

29. **Table 2.4.1.5. Blue whiting. Estimated recruitment (R) in thousands, spawning-stock biomass (SSB) in tonnes, average fishing mortality for ages 3 to 7 (Fbar 3-7) and total-stock biomass (TBS) in tonnes. Preliminary catch data for 2022 are included.**

    a. Some of the 2023 values that are in the model output are not in the report table. Is this correct?

30. **Table 2.4.6. Blue whiting. Model estimate of total catch weight (in tonnes) and Sum of Product of catch number and mean weight at age for ages 1-10+ (Observed catch). Preliminary catch data for 2022 are included.**

31. **Table 2.8.2.1.1. Blue whiting. Input to short-term projection (median values for exploitation pattern and stock numbers).**

32. **Table 2.8.2.1.2. Blue whiting. Deterministic forecast, intermediate year assumptions and recruitments.**

33. **Table 2.8.2.2.1. Blue whiting. Deterministic forecast (weights in tonnes).**

Some checking of the assessment inputs and settings:

1. "# preliminary year catches, the best guesses on total catch in the current (full) year (the catch of O-groups should be subtracted, but not done)" – JT: Has this been dealt with or not?
   MV: The 0-group catch at age is very small in the preliminary Q1 and Q2 catches (they are mainly caught in the second half-year), however our best guess on the total catch weight is transformed to catch at age without taking account of the 0-group. This will provide (an insignificant) bias, but we ignore that, for the preliminary data.
2. #totalyield<- 1233169 ## best guess for 2021 – JT: Cannot find this number anywhere?
   EB: this is the value the preliminary catches for 2021 used in last year's assessment, so I think this is not relevant anymore - we could have even deleted this line as we're not using it in this year's assessment.
   totalyield<- 1107529 ## best guess for 2022 - ok!
3. **Fpa<-0.32** in stock annex it says Fpa= 0.53. – JT: Not sure if this is a typo in the code or if 0.32 is correct, but in the stock annex it is Fpa = 0.53 (refer to table in stock annex on page 23). The other BRFs are ok.
   EB: thanks a lot for spotting, this is an old value! We'll change it to 0.32 in the stock annex.
4. JT: Configuration looks ok. I'm guessing that 1's in stock annex is equivalent to 0's in the script? See example below:

Coupling of fishing mortality STATES

Rows represent fleets.

Columns represent ages.

1 2 3 4 5 6 7 8 9 10 # Age

1 2 3 4 5 6 7 8 9 9 # Catch – stock annex

$keyLogFsta - in script
0 1 2 3 4 5 6 7 8 8

MV: The configuration file was made for the ADMB version of SAM, but now where we use the TMB version it is fine to change the configuration to that (and maybe add a sentence that the configuration file is for use with the TMB version of SAM).

EB: I'll make this change in the stock annex.

Audit of (Northeast Atlantic mackerel (mac.27.nea))

Date: 8th September, 2022

Auditor: Eydna í Homrum, Sondre Hølleland, Esther Beukhof

- *Audience to write for: ADG, ACOM, benchmark groups and EG next year.*
- *Aim is to audit (check if correct):*
  - *the stock assessment– concentrate on the input data, settings and output data from the assessment*
  - *the correct use of the assessment output in the forecast, and check if forecast settings are applied correctly*
- *Any deviations from the stock annex should be described sufficiently.*
- *By the conclusion of the working group, all update assessments should be audited successfully.*
- *Store all audits on SharePoint for future reference.*

General

This audit focuses on the advice sheet and the WGWIDE report section on NEA Mackerel. The advice sheet is generally consistent with the report section. Some small inconsistencies in catch tables were identified between the advice sheet and the report. The assessment model performance was good, and a systematic downward revision in the retrospective pattern for F in recent years seems to be improved.

For single stock summary sheet advice:

25) **Assessment type:** updated assessment (inter-benchmarked in 2019)
26) **Assessment**: analytical
27) **Forecast**: presented
28) **Assessment model**: A modified state-space Assessment Model (SAM) that is able to incorporate tag/recapture data – both historical steel tags (1980-2006) and recent RFID tags (2014-2021) together with three additional survey indices.
29) **Data issues:** For the IBTS age 0 index, no value for 2021 could be calculated due to technical issues with one survey vessel covering an historically important area. Therefore, the stock assessors had to deviate from the methodology in the stock annex for estimating recruitment for 2021 in the short-term forecast. The time-tapered geometric mean was estimated without the weighting procedure that uses the IBTS index and the SAM recruitment estimates combinedly. Instead, the time-tapered geometric mean was estimated using the SAM estimates only.
    There was no submission of Russian data to WGWIDE this year, yet both preliminary catches for 2021 and final catches from 2018-2020 indicated a Russian proportion of the catches of 13%. It is therefore considered appropriate to use the historic average (2018-2020) to assign catches to Russia in 2021 and to use samples from Iceland and the Faroes to allocate the Russian catches, as these countries fish largely within the same area and time of year.
30) **Consistency**: The retrospective bias (8 years considered), where the F has consistently been overestimated and SSB underestimated, is still present in older years but has become less apparent in recent years.
31) **Stock status**: SSB is above all reference points (MSY Bt_{rigger}, B_{pa}, and B_{lim}) and F is above F_{MSY} but below F_{pa} and F_{lim}.
32) **Management Plan**: There is no management strategy agreed for the stock, therefore ICES based its advice on the MSY approach. No agreement on the share of the stock has

been reached for 2022. Despite the acceptance of ICES advice, the total declared quotas in each of the years 2015 to 2021, all exceed the maximum catch advised by ICES.

General comments

The report section reads well and most information is there. However, the report is not entirely updated to the fact that Russian catch data (catch at age and catch by rectangle) were not submitted to WGWIDE; smaller edits have been reported to the team responsible for the report chapter to be included in this year's report.
The advice sheet is well documented. WGWIDE decided to present the recruitment in the advice sheet as age 2 rather than as age 0, as abundances of age 0 and age 1 do not reflect year class strength very well. Explanation for this is briefly stated in the figure captions of Figure 1 and 2 in the advice sheet, though not in the text of the sheet.

Technical comments

The code and input data for the analysis (assessment, and short-term forecast) are all available on SharePoint. An auditor reran the assessment and short-term forecast, reproducing the reported results. Some adjustments were necessary to achieve this (e.g., adjusting paths, installing specific versions of R packages etc.).

To the best of our knowledge, the assessment has been performed correctly according to the stock annex.

The report is rather long. Particularly the sections on surveys (used and unused) could be considerably shortened; at the time of reviewing the text, one survey-section (not used in the assessment) had not been updated.

Table and figure numbers and references to them in the text have been checked.

Conclusions

The assessment has been performed correctly according to the stock annex.

Checklist for audit process

General aspects

- Has the EG answered those TORs relevant to providing advice?
- Is the assessment according to the stock annex description?
- If a management plan is used as the basis of the advice, has been agreed to by the relevant parties and has the plan been evaluated by ICES to be precautionary?
- Have the data been used as specified in the stock annex?
- Has the assessment, recruitment and forecast model been applied as specified in the stock annex?
- Is there any **major** reason to deviate from the standard procedure for this stock?
- Does the update assessment give a valid basis for advice? If not, suggested what other basis should be sought for the advice?

Audit of (Stock name)

Date: 02/09/2022
Auditor: Are Salthaug

General

Advice was provided in 2021 for both 2022 and 2023, thus this year's assessment is exploratory.

For single stock summary sheet advice:

33) **Assessment type: update/SALY**
34) **Assessment**: trends - Category 3 with biennial advice
35) **Forecast**: not presented
36) **Assessment model**: Bayesian state space surplus production model fitted using catch data, 6 delta-lognormal estimated IBTS survey indices, and 1 acoustic survey estimate.
37) **Data issues:** No data issues
38) **Consistency**: This updated assessment is consistent with the assessment carried out in 2021
39) **Stock status**: Reference points are undefined**.**
40) **Management Plan**: A management strategy proposed by the Pelagic Advisory Council was evaluated and found to be precautionary (ICES, 2015). ICES provides advice for this stock following the precautionary approach, which in this case corresponds to the management strategy from the PelAC.

General comments

The chapter is easy to follow and interpret.

Technical comments

None

Conclusions

The assessment has been performed correctly according to the procedure.

Checklist for audit process

General aspects

- Has the EG answered those TORs relevant to providing advice?
- Is the assessment according to the stock annex description?
- If a management plan is used as the basis of the advice, has been agreed to by the relevant parties and has the plan been evaluated by ICES to be precautionary?
- Have the data been used as specified in the stock annex?
- Has the assessment, recruitment and forecast model been applied as specified in the stock annex?
- Is there any **major** reason to deviate from the standard procedure for this stock?
- Does the update assessment give a valid basis for advice? If not, suggested what other basis should be sought for the advice?

Audit of Red Gurnard stock assessment

Date: 02.09.2022
Auditor: Patricia Gonçalves

General

Assessment of this stock is not possible due to a lack of reliable catch data. Red gurnard is mainly landed as by-catch by demersal trawlers in mixed fisheries, predominantly in divisions 7d, 7e and 7h. High discard rates and lack of resolution at a species level make interpretation of spatial trends in catches in other areas problematic.

Landings by country and divisions are available from 2006 to 2021, discard data has been provided for 2015 - 2021 through Intercatch, 6 survey abundances index for the species area presented from around 1990 to 2021, with a combined biomass index built on these series.

For single stock summary sheet advice:

1) **Assessment type:** delta-lognormal assessment (from WKWEST)
2) **Assessment**: trend analyses
3) **Forecast**: not presented
4) **Assessment model**: surveys indices combined using a delta-lognormal model in an index of biomass to evaluate stock trend
5) **Data issues:** general lack of catch data reported at species level
6) **Consistency:** undefined
7) **Stock status**: undefined.
8) **Management Plan**: there is no management plan.

General comments

The section of red gurnard is very well structured and documented. The section includes a description regarding the lack of reporting data at species level and also the method used on the computation of a biomass index for this stock.

Technical comments

Conclusions

The combined biomass index has been correctly computed. There is no assessment for this stock.

Checklist for audit process

General aspects

- Has the EG answered those TORs relevant to providing advice?
- Is the assessment according to the stock annex description?
- If a management plan is used as the basis of the advice, has been agreed to by the relevant parties and has the plan been evaluated by ICES to be precautionary?
- Have the data been used as specified in the stock annex?
- Has the assessment, recruitment and forecast model been applied as specified in the stock annex?
- Is there any **major** reason to deviate from the standard procedure for this stock?
- Does the update assessment give a valid basis for advice? If not, suggested what other basis should be sought for the advice?