TAF REPORTING WORKSHOP (WKREPTAF)

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TAF REPORTING WORKSHOP (WKREPTAF)

Editor

Niels Hintzen

Authors

Kristan Blackhart • Jesper Boje • Ghislain Chouinard • Roxanne Duncan • Daniel Duplisea • Dorleta Garcia • Hans Gerritsen • Elvar H. Hallfredsson • Nils Olav Handegard • Margarita Rincón Hidalgo • Niels Hintzen • Jan Arge Jacobsen • Colin Millar • Iago Mosqueira • Sofie Nimmegeers • Martin Pastoors • Paz Sampedro • Cristine Stawitz • Els Torreele • Didzis Ustups • Jeffrey Vieser

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i Executive summary

The TAF Reporting Workshop (WKREPTAF) explored the reporting process for ICES expert groups (with special focus on stock assessment groups) and how this could become simpler, less time consuming, and of better quality. Now that ICES Transparent Assessment Framework tool (TAF) has been in operation for a few years, the workshop focussed on a next step: how to expand this tool to facilitate the reporting process within working groups. The workshop concluded that

1. Script-based reports (i.e. markdown) would allow stock assessment groups to automate the process of inserting and formatting tables and figures in the report and hereby saving considerable time to produce good quality reports. For this, there is a need, however, to

   a) Create a tool that generates markdown-based report templates

   b) Create a tool that generates a stock category specific template to be used to submit essential stock data to TAF

2. The data to be held within TAF can be documented within the report sections of the current ICES report in a standardized manner. With more data becoming available in TAF, there is the opportunity to more easily link ecosystem considerations and mixed fisheries considerations within stock specific chapters.

3. The transition from conventional reporting to script-based reports would benefit from agreeing on standardized stock assessment inputs for TAF.

4. The script-based reports open up the opportunity to directly incorporate information from the regional database (RDBES), DATRAS, Stock Information Database and Stock Assessment Graph database (SAG).

5. Training in TAF and markdown reporting are essential for the ICES community. With the help of enthusiastic individuals in expert groups, so called ambassadors, ICES can create some real-life examples for others to learn and adapt from.

The workshop provided input to the development of TAF and recommends the development of template generating packages to kick-off the use of script-based reporting within ICES as well as to design a training program in TAF, Github and markdown.

ii Expert group information

Expert group name	TAF Reporting Workshop (WKREPTAF)
Expert group cycle	Annual
Year cycle started	2021
Reporting year in cycle	1/1
Chair	Niels Hintzen, Netherlands
Meeting venue and dates	11-12 January 2021, Online meeting, 21 participants

1   Introduction

The TAF Reporting Workshop (WKREPTAF) explored in January 2021 the reporting process for ICES expert groups (with special focus on stock assessment groups) and how this could become simpler, less time consuming, and of better quality. Now that ICES Transparent Assessment Framework tool (TAF) has been in operation for a few years, the workshop focussed on a next step: how to expand this tool to facilitate the reporting process within working groups. The workshop benefited from involvement of a large range of experts from many different member countries and the experts working in the TAF governance group as well as the TAF developers working at the ICES secretariat. Five main topics were discussed as presented in this report.

a)   sharing experiences from experts familiar with TAF and highlight obstacles in operating TAF to provide guidance for the development of TAF

b)   inventorying and demonstrating the features within TAF for writing reports

c)   creating a list of requirements of procedures within expert groups that could be improved in order to save time (i.e. for the reporting)

d)   defining and describing required assessment outputs need from TAF, to demonstrate and learn from working examples

e)   developing a reporting template for the report using TAF (not technical)

The results of the presentations on these topics as well as the deliverables are reported in the chapters below.

A number of presentations by a variety of experts were given to the group for topic a-b. A summary of these presentation is provided below. The discussions following the presentations have let to the development of the main conclusions from the workshop.

Three parallel sessions on main topic c-e were discussed in two separate sessions. During the first session, initial results were obtained and in the second session, these results were refined. Finally, during a plenary presentation the results were complemented with missing elements and refined where necessary. This process has led to the results presented in section 4 – 6.

The results of the workshop should guide ICES in their ambition to move to more efficient ways of documenting the advisory procedures. The discussions have resulted in useful first drafts of required assessment outputs for automated reporting to be made operational, the outlook of reporting templates and an overview of the procedures that working groups have to go through in their meeting with associated time savers.

2 Sharing experiences

ICES WGNSSK Sole: A presentation was made on the use of TAF and markdown for the 2020 WGNSSK stock assessment of North Sea sole (sol.27.4). **The report section for this stock was written in R markdown, with all tables and plots generated in R from the model inputs and outputs.** The document thus created was later merged into the main expert group report. A simplified version of this setup was inspected by the group as an example of what can already by achieved using existing tools. The interest of the FLR development team was also highlighted, and their willingness to **extend FLR in any way that would help work on TAF and report writing using markdown and similar tools.**

ICES WGBIE Northern Hake[1]: The Northern stock of hake (hke.27.3a46-8abd) ([ICES, 2020](#)) is a widely distributed stock exploited by over 11 countries. The stock is assessed using SS3 ([Methot Jr and Wetzel, 2013](#)) and a bit complex structure: length structure, 4 seasons and the catch disaggregated in landings and discards over 7 fleets which are characterized by the fishing area and the gear used. The **whole assessment process is now in TAF** so it is completely reproducible and transparent. The raw landings and discard data are extracted from Intercatch and all the **allocations and generation of input data files are done in R scripts**. All the scripts can be run automatically using one main script, so it is not necessary to go through all the scripts to generate the data. Putting everything in TAF forced to improve the code and to automatize the SS3 input files generation which will ease future work and avoid making mistakes. The model takes one hour and a half to run so replicating the whole process is not immediate (the retrospective analysis takes about the whole day). The short-term forecast is now done in the output section of TAF, but there should be a separate section for it. Some people suggested splitting the assessment process in several repositories (data/assessment/forecast) but for hake everything was centralized it in a single repository. Now what is missing is to generate some standard tables (input and output) that can be used to automatize the report, the advice sheet. It is not only a question of writing the code but of deciding what to report and how to do it. Even if the workflow follows the TAF guidelines now, the compilation of data and analysis of the results need to be improved, making it more friendly. Putting everything in TAF was a hard work but it was a good exercise to tidy up all the scripts used in the assessment process of the stock.

NOAA Fisheries Stock SMART, and the Fisheries Integrated Toolbox: A brief overview of the efforts within NOAA related to automated data collection and processing was given. Efforts in the United States have largely focused on the **collection and presentation of completed stock assessment products**, but do not currently include any cataloguing of assessment model inputs, outputs, or specification files. NOAA has developed a centralized database (the Species Information System or SIS, internal to NOAA) to store assessment results as well as a public online tool for presenting assessment results data, **Stock SMART**, which displays assessment results and contains a growing suite of interactive tools that allows users to explore and access data. Current efforts are focused on developing automated reporting to streamline the assessment process and provision of results to the central database. To a large extent, these have been grassroots efforts to date, but national efforts to further support development are underway. Major challenges in the United States system include:

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[1] 10 March 2021: Correction to text: Northern hake (hke.27.3a46-8abd) is a stock assessed by WGBIE and not by WGWIDE.

- Federated systems of data collection and reporting for stock assessment
- Regional differences in the assembly of stock assessment reports and reviews
- Legal requirements related to report accessibility (i.e. Section 508 compliance)

Additionally, the Fisheries Integrated Toolbox (FIT) is an online portal that collates fisheries stock assessment, ecosystem, and socioeconomic model software tools in a centralized location. This allows region-specific models to be accessed and compared across the US and internationally. Furthermore, **through the use of Github, Rmarkdown, and better coding practices, FIT promotes more reproducible tools** within NOAA Fisheries. The evolution of the FIT is the Fisheries Integrated Modelling System (FIMS) which is a modelling framework that makes stock assessment and ecosystem and economic models more interoperable and standard. We envision this approach yielding a more standard US approach to stock assessment modelling, data, and reporting, which is analogous to and can increase compatibility with the standardized ICES TAF and TAF reporting process.

DFO experiences: In Fisheries and Oceans Canada (DFO), all science documents that result from an advice request and have passed through a peer review process are handled by the Canadian Science Advisory Secretariat (CSAS, http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp). **CSAS** reports are produced by scientists mostly following word templates provided by CSAS but in recent years, Rmarkdown templates have been developed and used by some of the department's scientists. These Rmarkdown templates have been codified in the r package **CSASdown (https://github.com/pbs-assess/csasdown)** following CSAS requirements and in close coordination with CSAS reprepresentatives who have shown to be receptive to these efforts. In addition to specific formatting requirements, CSAS documents must be produced in both of Canada's official language (English and French) and sometimes into indigenous languages as well. This dual language requirement can be difficult particularly when dealing with graphics and using word processor kinds of documents such as microsoft word. With Rmarkdown, however, figures in one language or another can be chosen with a switch and by using custom translation package called "rosettafish" (https://github.com/pbs-assess/rosettafish) to accompany CSASdown. Automatic report generation using Rmarkdown is seen as an advantage because it integrates the analysis with the report generation and it easily lends itself to collaborative working over platforms such as Github which is increasingly become the place where code is worked on, shared and stored with strict versioning this increasing the transparency, traceability and transferability (TTT Edwards *et al.*, 2019) of DFO's stock assessment work. Despite the advantages of using these approaches, there is a **steep learning curve** to using some of the required tools and it is driven by bottom-up efforts of scientist with the specialised knowledge and interest (aka 'geeks') who want to work in this way. This said, because these versioning and sharing tools are becoming ever more common and required in stock assessment and programming in general, it is anticipated that with time, this way of working will move beyond the realm of geekdom finding a more solid place within the science advisory structure within the department.

3 Demonstrating TAF reporting features

ICES TAF experiences: A common and clean way to share information is to agree beforehand what information you will share, how to find it and in what format. Once you have agreed this, anyone can develop other products, documents, web pages, etc. without knowing anything at all about how the information was created. This is often referred to as an interface, but can also be thought of as a contract that you have agreed to. This very simple idea is extremely powerful.

The current situation in ICES is that all stock assessments must submit a summary of the stock status to the SAG database. This is done through an .xml file. This is essentially an interface, and is the most basic interface required for a TAF project to be called a stock assessment. Let us call this interface the "stock-assessment" interface and the details of the contract is that the TAF project must provide a file called 'sag.xml' in the 'output' folder. If the stock assessor tags their TAF project as providing the "stock-assessment" interface, then it must provide this file in the output folder. What this means is that another system can now rely on the existence of the file sag.xml, and so uploading to the SAG database can be done automatically – all the user has to do is make sure this file exists in the correct place and has the correct format. It is also possible to check if the TAF project does indeed implement this interface, and so checks can be run by the use during development and also by the TAF system.

Extending this, there can be other interfaces that a **stock assessor can "tag" their repository** with. Some examples are: "category1-assessment", "category1-forecast", "category3.2". Each of these interfaces would come with **obligations in terms of what files should be produced** and where they are located, an example is "catch-at-age.csv" in the "input" folder. There is additional information required to fully understand the contents of these, if the data is disaggregated by fleet, for example. However, nonetheless, if there was a standard set of files, filenames and format that defines the "category1-assessment" interface, then any TAF project tagged as a "category1-assessment" can be tested that it conforms, and also be relied upon to provide this information. Many benefits come from this – a reporting project or module can be developed, methods can be written that allows the extraction specific pieces of information across TAF projects. Additionally, it is now possible to develop a database of all or some of the information exposed through the interface.

The work of 4th task is essentially defining the required and optional components of the interfaces listed in the previous paragraph.

DFO experience: Science advisory reports in Fisheries and Oceans Canada Canadian Science Advisory Secretariat (DFO-CSAS, http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp) can be produced in Rmarkdown using the Rpackage CSASdown (https://github.com/pbs-assess/csasdown). CSAS down allows one to develop Rmarkdown templates for several different kinds of CSAS reports that conform to CSAS style standards. Reports can be saved in multiple formats but are meant to be knitted directly into the final PDF document to be archived of the CSAS website. The main advantages of using an R package like CSASdown to generate rmarkdown report templates are:

a) **multiple kinds of templates can be produced by one package**

b) the package can be updated when the report templates change preventing the problem of people using old archived templates

c) header type graphics can be easily included as part of the package

d)   the package can be distributed quickly and openly allowing assessment groups always to have access to the latest templates

e)   **help files** can be part of the package showing how to use a template

4   List of requirements of procedures to save time

The objective on this topic was to create a list of requirements of procedures within expert groups that could be improved in order to save time (i.e. for the reporting). Important questions that were addressed were:

- What is the time sink?

- Where could time be saved?

Data preparation as input for assessments came out as a top issue, running assessments themselves is also time consuming, as is formatting of figures and tables.

4.1   Main issues handled at expert groups

The typical issues during a working group meeting are usually as follows.

1.   Describe data. This step is needed to check the integrity of the input data. Data may be manually added to the TAF, but there are also data services that can be used to link in data from public databases. **One way of saving time is to rely on these data services rather than manually adding data to the repository**. Generic codes could be used to generate the tables required for the report (e.g. catch weights, stock weights, catch numbers, survey indices, natural mortality, …) and tables that could be stored under supplementary information for either data that is too elaborate to be included in the report (e.g. catch at length by year and quarter) or data that is not actually being used in the assessment (such as catch numbers by fleets, catch by rectangle or very long time series of data).

2.   Generate the input data for the assessment (possibly for different assessment methods). This part could be automated similarly to the process described under 1.

3.   Carry out exploratory runs to check on the default assessment. As this falls under the existing TAF framework, the process should already be transparent and time-efficient.

4.   Assessment diagnostics (Fit to data, retrospective analysis, residual plots). ACOM is in the process of developing guidelines for assessment diagnostics that should be taken into account. This should lead to uniform assessment diagnostics that can be evaluated by a larger group of experts.

5.   Estimated quantities from the model: Stock status and a set of standard output tables. As this falls under the existing TAF framework, the process should already be transparent and time-efficient. **There is however the need for a default template of data** to be uploaded to TAF depending on the stock category that can be used by different tools along the advisory process.

6.   Short term forecast estimation

    - Generating and documenting the input data for the STF (using code)
    - Running the STF
    - Documenting the results with all options
    - All input data should be available and easily accessible somewhere (either in report or TAF)

As this falls under the existing TAF framework, the process should already be transparent and time-efficient.

7. Reference points

- Normally taken from stock annex, except during a benchmark.

8. Audit of full assessment and forecast with catch options. Checks to be carried out:

- Does the assessment and forecast follow the stock annex?
- Are the numbers correct (e.g. check with survey reports)?
- Use code to compare input datasets between this year and previous year
- Use code to check the consistency of local results with results on TAF server

9. Writing the report

- **Matching table and figure numbers between the text and figures / tables.** When a new figure is added, these numbers are affected and require work to correct. Potential to use Markdown approach to reference tables and figures.
- Formatting tables, etc. This could be improved using code, both in handling time and consistency of presentation.
- Version control, collaboration; fixing problems in Github is an important feature to have (training required)
- Drafting text data, assessment, forecast, management, assessment quality and ecosystem considerations

10. Drafting advice

- Upload data to SAG
- Generate plots and tables for draft advice sheet
- Advice drafting and discussions

4.2   Conclusions

To move forward with using the TAF in combination with markdown to generate reports, ICES will first have to identify a general approach and process that can be used for report generation, e.g. automatic generation of reporting templates. Once that is adopted, ICES will need to build staff familiarity with these software packages through training, ensuring that any automated products can be integrated with manually developed text in Word. The Workshop recommended that as a part of this approach we consider what tables and figures are made available in a stock assessment report, moving towards a simpler document, but ensuring that it retains utility and legibility. It also recommended increasing the extent of information stored in the stock annex potentially moving all analyses / figures / tables included in benchmarks into the annex.

More crucial to these conclusions and recommendations is how we interface the report writing with the results from assessments. The general principle should be: **data lives in one place only.** This means that a stronger focus is needed on input and output data processing and storing in step 1–10.

4.3　　Recommendations/suggestions

1. Share generic code to generate figures and tables on catch data or survey data from e.g. intercatch, RDBES, Datras etc.; e.g. sole 7e code TAF Github.

2. Provide markdown package (similar to CSASDown, https://github.com/pbs-assess/csasdown) with guidelines and examples (for report sections) for using markdown for WG reports. Plan for training sessions. Consider a dedicated workshop to convert report sections to markdown files. Share best practices on collaborative working with markdown. Keep Word for writing/modifying text and reviewing using track changes etc.

3. **Markdown+Github serve as an excellent way of keeping track of structured information and versioning**. However, using git has a higher user threshold and may be difficult to work with during a working group. As a minimum it could be used to generate the final version and possible subsequent revisions. If there are problems in the text or data, the changes are made in the markdown and resubmitted. The new ICES library system also allows for a tight integration with git, which makes it possible to automate the final formatting and automatically generating the published versions, based on the revision history of the report.

4. Time may be saved by minimizing the content that needs formatting. This would be achieved by moving certain bits of data and results to **online storage with permanent links**. The user would tag the figures and tables they want to "publish online" or make available with the report. Some way of referring to a specific figure or table would be needed i.e. see Figure catch summary (but then with appropriate references to the stock, variables, source etc.). The parallel with a peer review publication is the supplementary material, which could in effect be an online resource with limited formatting or with formatting on the fly (html).

5. Drafting of the report. Explore the possibility of working with report section broken down into constituent parts. Use snippets of r or markdown codes for the different parts to generate the required outputs. Then you have a central script where each section is pulled in.

6. Produce tables and figures. Publishing the tables in figures only in one place and link from there. Tables should not appear in multiple sources.

7. Revise report style: **Reduce the report text and include more text in the stock annex**. For example, there is often still text on how stock weights are calculated (with specific references/links), which does not change from year to year. Then, only things that change should be contained in the working group report and specific links to the appropriate sections in the stock annex can be used to explain the methods being used.

5 Required assessment output needs from TAF

The main recommendation from Section 4 indicates a standardized approach to store data from assessments. Such a data template is suggested in this chapter and the process how one would create and interact with such a template is described.

Based on the report sections of some specific stocks (ane.9a, ank.27.7-8abd, hke.27.3a46-8abd, mon.27.7-8abd and sol.7d) a list of tables were compiled to describe the required assessment output needs form TAF, one for ICES category 1 stocks (Table 1) and a second one for ICES category 2 stocks (Table 2). These tables include the necessary data to produce the tables and graphs for the report and to replicate the assessment or apply other assessment models with similar complexity. Defining a common shape/format for each of the tables is necessary in order to be able to write generic code to produce graphs and tables for the report. The format would depend on the stock structure used in the assessment (age/length) and the configuration of the assessment model (one fleet/multi fleet).

With all these tables uploaded into TAF, some detailed input data that is now in the working group reports for many stocks, such as catch at age matrices or weight at age matrices, may be not be available in the report anymore as they will be publicly available online in the TAF repository, so the reports only have the most relevant information.

For category 3 stocks (Table 1), where a model is used to provide an index of abundance, then the inputs and diagnostics should be tabled. Potential models are surplus production such as SPiCT, spatial models do derive an abundance index from raw survey data, e.g. VAST, and models to derive abundance indices from acoustic data, e.g. RStox. It might be simpler to move these models into a separate project.

The work of producing the tables should occur at assessment working group level as the stock coordinator(s) are the persons that centralize all the information and have the best knowledge of the assessment process of each of the stocks. However, data compilation routines at RDBS and DATRAS level could facilitate the work of the stock assessment working groups.

A **strategic plan and training programs** should be defined with the aim of reaching all the stock assessment coordinators as not all of them have the required skills to run the necessary tools to put the assessment into TAF and use the reporting tools. A very useful tool could be to have a fully worked out example for one stock in each working group showing how the whole TAF cycle, from data compilation to the generation of the report using the templates and the tables uploaded into TAF.

Stock annex could be supplemented by a TAF project containing the benchmark approved model, settings and data, and the run. This could have a higher level of detailed reporting and could potentially reduce the requirements of the expert group TAF assessment project. The Stock annex could also hold some utility functions to do specific analyses, such as filling in missing catches, or calculating mean weights at age.

To aid the creation of other products from these outputs, the filenames and formats associated with the entries in the table below should be developed as much as is possible and these definitions made available so that 1) a **check can be made that all non-optional files are provided** and 2) that **validation can take place on the files provided**. This list of required and optional outputs would then allow report templates to be built around these specifications. It would be useful to have methods to simplify the creation of these standard outputs. It may also be useful to the user to provide TAF a template which would take some arguments, such as assessment method, the results from the assessment, to produce a simple 'output.R' file (for example) to reduce the

amount of coding required for the stock assessor. For example, given a model: SAM, and a fitted object "sam_fit.rData", a script that provides all the required outputs could be generated and then modified by the user if required.

Table 1. A list of the necessary data tables, inputs and output of the assessment, to be uploaded into TAF for category 1 stocks.

Type	Output	Product	Optional?
Input	Catch time series (biomass), possibly by fleet, area, country	Tables and plots	
Input	Age length key (commercial and survey)	Table	optional
Input	Biological data (weights-at-age (at-length), maturity, etc.) M if it is an input	Tables and plots	
Input	Biological parameters (growth parameters, model for natural mortality, etc.)	Table	optional
input	Catch (landings, discards) numbers at age (at-length) time series, possibly by fleet (can be used for: bar/line plot, bubble plot etc)	Tables and plots	
input	Index time series (catch rate, biomass or numbers at age) Can be used for standardised index at age bubble plot, internal/external consistency plots.	Tables and plots	
Input	Spatially disaggregated raw survey data	Table and plot (maps)	optional
Input	Tagging data	Table	optional
Input	External drivers (e.g., temperature, chlorophyll)	Table	options
Assessment	F-at-age (at-length) or selectivity at age (at-length) over time, possibly by fleet	Tables and plots	
Assessment	Estimated/predicted catch at age (at-length) over time, possibly by fleet	Tables and plots	optional
Assessment	Estimated/predicted survey / commercial index at age (at-length) over time	Tables and plots	optional
Assessment	Q at age(length) (over time)	Tables and plots	
Assessment	Any other estimated quantities (e.g., SSB and recruitment) / parameters, including uncertainty and variance parameters, if available.	Tables	
Assessment	Residuals of all estimated quantities / parameters	Plot	
Assessment	Retrospective runs – summary table information is enough in most cases	Tables and plots	
Forecast	Cohort contribution to forecast landings and ssb	Table	optional
Forecast	The values calculated as the short-term forecast inputs.	Table	
Forecast	Forecast catch, ssb etc. for different levels of F. Uncertainty.	Table	
Assumptions, model settings	Model settings, priors etc. – how to report? More for Stock annex.	Configuration files and/or tables	optional
Metadata	Explicit forecast assumptions		
Metadata	Assessment category, model, inputs.		

Table 2. A list of the necessary data tables, inputs and output of the assessment, to be uploaded into TAF for category 3 stocks.

Type	Output	Product	Optional / essential
Assessment	Index time series	Tables and plots	
Input data	Catch (biomass) in case of e.g. SPiCT		
Input data	Raw survey data, spatially disaggregated		optional
Input data	Acoustic data, raw-ish (e.g. target strength + location)		optional
Assessment	Catch advice	Table and plot	
Model settings	Prior assumptions etc. – report on critical ones.		
metadata	Assessment category, model, inputs, was the precautionary buffer applied, uncertainty cap, …		
	Length-based indicators (LBI)		optional
Input data	Length frequency for LBIs		optional
Input data	Other life-history parameters (growth, maturity, etc.)		optional

6 Reporting template

A list of proposed section headers for TAF-generated reports was compiled during the workshop, noting that formatting will differ based upon available data and stock category. The list of sections identified during the workshop (provided below for Category 1 stock) was **largely consistent with existing sections found within ICES advice reports** ([see example](#)), and an example markdown report based on sol.27.4 was compiled by one of the participants ([stored in the meeting sharepoint](#)). Care was taken to align the report sections with the recommendations made under the previous task working towards a template for assessment outputs. The breakout groups called attention to the need for **standardization of TAF inputs**, where possible, to maximize data utility and reduce confusion. They also made recommendations with respect to the format of output files, and the potential addition of two sections to the report centred on ecosystem considerations and mixed fishery considerations.

Plenary discussions focused on this task stressed that any new report sections must provide utility to justify their inclusion. While there was general agreement that most existing data categories should be preserved and automated through TAF, there was hesitation towards the immediate inclusion of headers related to ecosystem considerations and mixed fisheries dynamics. Both of these topics represent ICES priorities, and will receive broader consideration in stock assessments moving forward. However, their current use is too limited to justify the added reporting burden they would place upon assessment scientists as permanent report sections. As such, the working group did not recommend their immediate inclusion in TAF and its associated markdown capacities.

6.1 Recommendations/suggestions

- Output format (pdf, html and/or docx) might limit markdown options available, although most markdown parsers (e.g. pandoc) can output in any of those formats. Recommend allowing TAF users to select their desired output and to separate content from formatting to the greatest extent possible.

- Template and auxiliary functions to be a part of an icesReport package. An empty document following the template to be created using:

- rmarkdown::draft("sol.27.4.Rmd", template="cat1", package="icesReport")

- Example markdown report available in the [meeting sharepoint drive](#)

Standardization Needs

- Spatial information (catch by squares)

- Table formats and column names

- Naming conventions (units, country names & codes, gear types, surveys, ICES divisions)

- Consistent use of abbreviations

- Presentation of uncertainties

- Risk categories (i.e. condition of the stock – to bring consistency when used as communication tool)

Proposed ICES Report Sections

- Information pertinent for ecosystem-based advice

- Information pertinent for mixed fisheries

6.2   Example: CAT1 Stock Assessment

- General Information

- Fisheries Data

  o   Official Catch Records

  o   International Catch Processing

  o   ICES estimates of landings and discards

  o   Composition of Catch Data

- Biological Data

  o   Composition data (weight at age, length at age, …)

  o   Maturity & Natural Mortality

- Survey Data

  o   Important to include metadata on: survey name, time period & periodicity, area covered, countries involved, gear used, data transformations, time series of biomass, age or length distribution

- Assessment

  o   Model Configuration

  o   Diagnostics

      ▪   Residuals of estimated quantities & parameters

      ▪   Retrospective runs – summary table likely sufficient

  o   Results

- Reference points

- Short-term forecasts

  o   Recruitment estimates and intermediate year assumptions

- Tables

  o   Example: Time-series of the official landings by country and overall total, the official BMS landings, landings reported to ICES and total TAC.

- Plots & Figures

- Assessment Output

  o   Research priorities and challenges (Note: items available for some stocks here)

  o   Management advice

7 References

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Annex 1: List of participants

Name	Institute	Country (of institute)	Email
Cristine Stawitz	NOAA Fisheries Office of Science and Technology	United States	christine.stawitz@noaa.gov
Colin Millar	ICES Secretariat	Denmark	colin.millar@ices.dk
Daniel Duplisea	Fisheries and Oceans Canada	Canada	Daniel.duplisea@dfo-mpo.gc.ca
Didzis Ustups	Fish Resources Research Department	Denmark	Didzis.Ustups@bior.lv
Dorleta Garcia	AZTI-Tecnalia	Spain	dgarcia@azti.es
Els Torreele	ILVO - The Flanders Research Institute for Agriculture, Fisheries and Food	Belgium	els.torreele@ilvo.vlaanderen.be
Elvar H. Hallfredsson	Institute of Marine Research	Norway	elvar.hallfredsson@imr.no
Ghislain Chouinard	ICES - International Council for the Exploration of the Sea	Denmark	ghislain@ices.dk
Hans Gerritsen	Marine Institute	Ireland	hans.gerritsen@marine.ie
Iago Mosqueira	Wageningen University & Research	Netherlands	iago.mosqueira@wur.nl
Jan Arge Jacobsen	Faroe Marine Research Institute	Faroe Islands	janarge@hav.fo
Jeffrey Vieser	NOAA Fisheries Office of Science and Technology	United States	jeffrey.vieser@noaa.gov
Jesper Boje	DTU Aqua, National Institute of Aquatic Resources	Denmark	jbo@aqua.dtu.dk
Kristan Blackhart	NOAA Fisheries Office of Science and Technology	United States	kristan.blackhart@noaa.gov
Margarita Rincón Hidalgo	The Spanish Institute of Oceanography	Spain	margarita.rincon@ieo.es
Martin Pastoors	Pelagic Freezer-Trawler Association	Netherlands	mpastoors@pelagicfish.eu
Niels Hintzen	Wageningen University & Research	Netherlands	niels.hintzen@wur.nl
Nils Olav Handegard	Institute of Marine Research	Norway	nilsolav@hi.no
Paz Sampedro	The Spanish Institute of Oceanography	Spain	paz.sampedro@ieo.es
Roxanne Duncan	Marine Institute	Ireland	Roxanne.Duncan@Marine.ie
Sofie Nimmegeers	ILVO - The Flanders Research Institute for Agriculture, Fisheries and Food	Belgium	sofie.nimmegeers@ilvo.vlaanderen.be

Annex 2: Resolutions

2020/2/FRSG57 **The TAF Reporting Workshop** (WKREPTAF), chaired by Niels Hintzen (The Netherlands), will meet online 11–12 January 2021:

a) to share experiences from experts familiar with TAF and highlight obstacles in operating TAF to provide guidance for the development of TAF
b) to inventarize and demonstrate the features within TAF for writing reports
c) to create a list of requirements of procedures within expert groups that could be improved in order to save time (i.e. for the reporting)
d) define and describe required assessment outputs need from TAF, to demonstrate and learn from working examples
e) to develop a reporting template for the report using TAF (not technical)

WKREPTAF will report to ACOM by 12 February 2021

Supporting information

Priority	High.
	At March 2020 ACOM, frustration was voiced about the failure to reform the modus operandi and reporting of working groups. A number of expert groups are now using the Transparent Assessment Framework (TAF), and R markdown scripts (and GitHub) to compile their reporting but then transfer these reports into word documents. This is very ineffective and inefficient. Experts are becoming increasingly frustrated by the failure of our reporting system to adapt.
	There is a perception that reporting requirements never change, however ACOM underlines the need for an adaptive reporting making use of new tools. There is currently a large amount of time being spent by experts formatting tables and figures for inclusion in the reports, which are held in TAF, SAG or SID and thus these efforts can be used elsewhere. In addition the place of record (for time series and recording of the methods for construction and assumptions of time series) should be the stock annexes and the databases and not the annual WG report.
	TAF training courses have now occurred in almost all regions of the ICES area (not NWWG and AFWG). A large number of stock assessments are now loaded into TAF. The summary graphics for the fisheries overviews are also now available through TAF.
	Some chapters of reports are being written directly into word. Some are being prepared using R markdown scripts and then transferred. Some experts are using other means. Large parts of the report are replications of data and graphics that become available online. Even if the reports are not rendered to html, the reports can be based around links to TAF, SAG and SID.
	Reports need to:
	• Set the context of the analysis, fish, fisheries and management
	• Show explorations of the models and data
	• Explain decisions made

	• Put the findings into the context of fish, fisheries and fisheries management
	• Provide other insights from the expert group
	• Potentially include mixed fisheries considerations
	• Provide recommendations as appropriate
	• Confirm that audits and quality checks took place
	Much of the reporting in early parts of each chapter explains how time series were constructed (e.g. catches, maturity, weights at age). This information must not be lost. Shifting to html and the availability of documentation schemes, such as Roxygen, means that tables of time series of data created in TAF can be annotated to show rational and changes in the construction of time series.
Scientific justification	Since ICES advice should be based on quality assured data and methods that are published and understandable, it is obvious that the scientific justification for this work is clear.
	It is likely that advice in the near future will be web-based (see VISA project) and it is an aspiration that the underlying knowledge base will also be web based. This knowledge base needs to conform to international quality standards. This suggests that ACOM should encourage rendering of advice through html. Services will be offered to export it (such as to pdf).
Resource requirements	Support by ICES secretariat for setting up a virtual meeting
Participants	Scientists with experience and interest in TAF, even if they are not familiar yet with using TAF.
	ACOM members
	ICES Data Centre
Secretariat facilities	Secretariat administrative and scientific support.
Financial	No extra funding requested
Linkages to advisory committees	The results of this work will feed in directly in the ICES expert working groups and the advisory process.
Linkages to other committees or groups	
Linkages to other organizations	