EU request on the production of matrices by year and age with F-at-age for stocks corresponding to the latest published advice for each stock

Service summary

ICES has produced, as a technical service to DGMARE, matrices by year and age (in csv format and as R-objects) with F-at-age by year per stock, for stocks listed in the Annex (Table 1) that are assessed analytically, corresponding to the latest published advice for each stock.

Where analytical assessment was not available, no data are provided.

Matrices by year and age of partial F-at-age or catch-at-age by fleet and/or métier for stocks with analytical assessments are provided where possible. ICES is not in a position to include data for Mediterranean stocks.

ICES Data Centre produced the outputs, using ICES Transparent Assessment Framework (TAF) * in collaboration with stock assessors and stock coordinators on the status and information available for each stock (Table 1). †

Request

The European Commission, DGMARE, has requested ICES to:
- *Provide matrices by year and age (FLQuant style) in csv formats or as R objects with F-at-age by year per stock for the stocks listed in appendix to the extent that these are assessed analytically. This should correspond to the latest published advice for each stock;*
- *To the extent possible, provide matrices by year and age of partial F-at-age, or as second best, catch-at-age, by fleet and/or métier for the same stocks. Fleets and métiers definition is left to the decision of ICES on the basis of data availability, as it is understood that there should be consistency between F-at-age by stock and by fleet/métier. Suggestions would be to use data as from the mixed-fisheries advice where available, or time series extracted from InterCatch otherwise.*

Elaboration on the service

Matrices are available in an archived form at ICES website ‡.

Basis of the service

The aim of the request is to support the performance of technical measures to conserve fishery resources and protect marine ecosystems according to Article 31 of EU Regulation 2019/1241 (EU, 2019).

The present request is a result of STECF being asked to review the Technical Measures Regulation (EU, 2019) that entered into force in 2019. In 2020, STECF was requested to assess the extent to which technical measures at the regional and European Union level have contributed, since 2013, to achieve the objectives set out in Article 3 and the targets set out in Article 4 of EU Regulation 2019/1241 (EU, 2019). This includes, e.g. selectivity improvements, protection of marine habitats and sensitive species, and the calculation of selectivity indicators, as laid out in Article 31(2) of the Regulation, for the key indicator stocks for the species listed in Annex XIV of the Regulation (EU, 2019). STECF needs additional data to be able to carry out the requested task.

---

* https://taf.ices.dk.
† The code is available at https://github.com/ices-taf/2020_4029-29_SpecialRequest.
‡ https://doi.org/10.17895/ices.data.7496

Methods

Process

ICES Secretariat compiled and retrieved the necessary data and used the Transparent Assessment Framework (TAF) [§] to develop the matrices by year and age with F-at-age per year per stock. A summary of the process is described below:

1. Define data formats necessary to

    a. feed data into TAF:
        A format was defined, similar to that used by ICES, to upload summary data to the Standard Graphs Database. This was used by ICES Data Centre to upload age-based estimates of fishing mortality.

    b. provide data to STECF:
        A csv format and FLQuants, saved as R-objects, will meet the requirements of the request.

2. Produce TAF input format

    Stock assessors were contacted and requested for a TAF or Stockassessment.org assessment. For stocks with a TAF assessment (Table 1), an extension of the existing TAF code was suggested to develop the matrices of F-at-age by year and stock.

    For stocks without a TAF assessment, a TAF repository was created, and one of the following options was chosen based on data availability:

    a. Request the code to rerun the assessment and develop a TAF code for the assessment;
    b. Request assessment results files from the stock assessor;
    c. Extract results from ICES expert group reports.

    A total of 32 stock assessments were investigated, corresponding to the species and areas listed in the request. Of these, 7 were held on TAF, 7 on StockAssessment.org (with some duplication), 6 provided the data via ICES SharePoint, and 3 were extracted from the expert group report. 11 of the stocks had no analytical assessment.

    Data provided via InterCatch was used to provide catches-at-age by major fleet component. These data, provided as a csv file and as FLQuants, were saved as R-objects for the stocks where possible.

3. Subsequently, the data were uploaded to the TAF results database, using the TAF input format defined above in Item 1.a. The functions developed for this procedure are available in the development release of ICES TAF R-package (Magnusson and Millar, 2020), and demonstrated in the TAF repository for the current request. [**]

Finally, an extraction was carried out from TAF, and data following the format agreed in Item 1.b were produced and made available as an ICES data product. [††]

Data outputs

The data outputs are:

*   F-at-age estimates per year per stock for analytical assessments.

[§] https://taf.ices.dk.
[**] https://github.com/ices-taf/2020_4029-29_SpecialRequest.
[††] https://doi.org/10.17895/ices.data.7496.

- Partial F-at-age or catch-at-age estimates by major fleet component, year, and stock for analytical assessments where this was possible.

Caveats

For plaice in Division 7.a (ple.27.7a), 40% of the discards are assumed to survive. Hence, fishing mortality data for this stock do not account for the total catch, but only for the dead catch, i.e. landings plus 60% of the discards.

For haddock in in Subarea 4, Division 6.a, and Subdivision 20 (had.27.46a20), estimates refer to the full year (January–December) except for age 0, for which the mortality rate given refers to the second half-year only (July–December), The 2020 estimates are TSA forecasts.

For cod in divisions 7.e–k (cod.27.7e–k), haddock in divisions 7.b–k (had.27.7b–k), and whiting in divisions 7.b–c and 7.e–k (whg.27.7b–ce–k), due to an ongoing benchmark for these stocks, the advice release is postponed until the 30th October 2020. F-at-age has not been provided for these stocks, but will be available via the web service developed for this request. For whiting in Division 6a (whg.27.6a), the assessment was rejected in 2020, and the F-at-age estimates provided are from the accepted 2019 assessment.

Sources and references

EU. 2019. Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1224/2009 and Regulations (EU) No 1380/2013, (EU) 2016/1139, (EU) 2018/973, (EU) 2019/472 and (EU) 2019/1022 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005. Official Journal of the European Union, L 198: 105–201. http://data.europa.eu/eli/reg/2019/1241/oj.

ICES. 2019. Working Group on Mixed Fisheries Advice Methodology (WGMIXFISH-METHODS). ICES Scientific Reports, 1:58. 56 pp. http://doi.org/10.17895/ices.pub.5576.

ICES. 2020a. ICES Transparent Assessment Framework. Copenhagen, Denmark. ICES. 31.09.2020. https://taf.ices.dk.

ICES. 2020b. Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE). ICES Scientific Reports, 2:49. 845 pp. https://doi.org/10.17895/ices.pub.6033.

ICES. 2020c. Working Group for the Celtic Seas Ecoregion (WGCSE). ICES Scientific Reports, 2:40. 924 pp. https://doi.org/10.17895/ices.pub.5978.

ICES. 2020d. Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK). ICES Scientific Reports, 2:61. 1140 pp. http://doi.org/10.17895/ices.pub.6092.

Magnusson, A. and Millar, C. 2020. ICES TAF: Functions to Support the ICES Transparent Assessment Framework. R package version 3.5.0.9004. https://taf.ices.dk.

Annex

Table 1 List of stocks for which F-at-age data were requested.

Area	Species	Stock_code	Data category *
North Sea	Cod	cod.27.47d20	1
	Haddock	had.27.46a20	1
	Saithe	pok.27.3a46	1
	Whiting	whg.27.47d	1
	Plaice	ple.27.420	1
Northwestern waters	Cod	cod.27.6a	1.2
	Cod	cod.27.6b	6.2
	Cod	cod.27.7a	3
	Cod	cod.27.7e-k	1
	Haddock	had.27.6b	1
	Haddock	had.27.7a	1
	Haddock	had.27.7b-k	1
	Saithe	pok.27.7-10	5
	Whiting	whg.27.6a	3
	Whiting	whg.27.6b	6.2
	Whiting	whg.27.7a	1
	Whiting	whg.27.7b-ce-k	1
	Plaice	ple.27.7a	1
	Plaice	ple.27.7e	3.2
	Plaice	ple.27.7bc	6.2
	Plaice	ple.27.7fg	3.2
	Plaice	ple.27.7h-k	3.2
Southwestern waters	Hake	hke.27.3a46-8abd	1
	Hake	hke.27.8c9a	3.2
	Whiting	whg.27.89a	5.2
	Megrim	ldb.27.7b-k8abd	5.9
	Megrim	ldb.27.8c9a	1
	Megrim	meg.27.7b-k8abd	1
	Megrim	meg.27.8c9a	1
Baltic Sea	Cod	cod.27.22-24	1
	Cod	cod.27.24-32	1
	Plaice	ple.27.21-23	1

* According to http://sid.ices.dk/default.aspx.