WORKSHOP ON FISH OF BYCATCH RELEVANCE (WKFIBRE; outputs from 2024 meeting)

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i Executive summary

The Workshop on Fish of Bycatch Relevance (WKFIBRE) convened to revisit and revise the criteria for updating the list of endangered, threatened and protected (ETP) fish species of bycatch relevance for all ICES Northeast Atlantic and Baltic Sea ecoregions. WKFIBRE based its work on the outcomes of the ICES Workshop on Fish of Conservation and Bycatch Relevance (WKCOFIBYC), particularly the WKCOFIBYC's comprehensive species list (CSL) was used as starting point. WKFIBRE suggested an update of the CSL by incorporating the most recent considerations by the North-East Atlantic Fisheries Commission (NEAFC) and the inclusion of the Norwegian Red List for Species. WKFIBRE recommended removing and/or revising some of the criteria agreed by WKCOFIBYC, suggested one additional exclusion criterion (removal of species not present in a given ecoregion) and streamlined the overall process. In total, 9 criteria (6 exclusion and 3 inclusion criteria) are suggested by WKFIBRE. WKFIBRE proposes a process which starts from the CSL and applies a first set of species exclusion criteria for all ecoregions combined, followed by species exclusions by ecoregions, and species inclusions by ecoregion. This resulted in 12 ecoregion species lists (ESLs). The last element in the process is to apply expert judgement to finalise ecoregion bycatch lists (EBL). Future work should include a revision of the original CSL and its compilation, as well as the establishment of a process to update this list periodically. The CSL list compiled by WKCOFIBYC is already outdated and all resulting lists may not reflect the current status for ETP species of bycatch relevance.

ii Expert group information

Expert group name	Workshop on Fish of Bycatch Relevance (WKFIBRE)
Expert group cycle	1/1
Year cycle started	2024
Reporting year in cycle	1/1
Chair(s)	Claudia Junge, Norway
	Henn Ojaveer, Estonia
	Youen Vermard, France
Meeting venue(s) and dates	28-31 October 2024 (online meeting) 26 participants

1 Introduction

1.1 Background on bycatch of endangered, threatened and protected (ETP) species

Species which are listed as **endangered, threatened** or **protected** under national and international legislation are being referred to as **ETP** species. Bycatch of ETP species is defined as all catches of ETP species, including those not taken on board, that are not targeted (incidentally or accidentally caught) in fisheries operations[1]. ICES is requested to provide recurrent ETP species bycatch advice according to the Specific Grant Agreement with Directorate-General for Maritime Affairs and Fisheries (DG MARE).

1.2 Background to the Workshop on Fish of Bycatch Relevance (WKFIBRE)

The WKFIBRE convened to revisit and revise the criteria for updating the list of ETP fish species of bycatch relevance for all ICES Northeast Atlantic and Baltic Sea ecoregions. WKFIBRE based its work on the outcomes of the ICES Workshop on Fish of Conservation and Bycatch Relevance (WKCOFIBYC), which started by identifying nearly 600 candidate species from the northeast Atlantic and the Mediterranean, including some brackish water and diadromous species (ICES, 2021). It should be noted that WKFIBRE was not tasked to review the methodological basis of the initial species compilation process (i.e. establishing the Comprehensive Species List (CSL) – species in international and national hard law, red lists of extinction risk and various academic exercises to identify sensitive species), but only to **propose revisions to the exclusion/inclusion criteria** to be applied to the initial comprehensive species list.

ICES has recently updated its Roadmap for Endangered, Threatened and Protected species bycatch (ICES, 2024)*, and the lists of ETP species of marine mammal, seabird and fish of bycatch relevance (Annexes 1 and 2 in the roadmap) are pending revision. WKFIBRE gathered the necessary expertise to provide new scientific justification to support the establishment of updated lists of fish species of bycatch relevance by ecoregion. The preliminary draft fish lists provided by WKFIBRE will be a subject for consideration of approval by the ICES Advisory Committee (ACOM). The final species lists will be published as an Annex to the ICES Roadmap for bycatch of endangered, threatened, and protected species aiming to inform prioritisation of and support future work within ICES.

[1] ICES. 2024. ICES Roadmap for Bycatch on Endangered, Threatened, and Protected (ETP) Species. ICES Convention, policies, and strategy. 48 pp. https://doi.org/10.17895/ices.pub.26003467

2 ToR a) Review and evaluate the criteria established at WKCOFIBYC, that were applied to develop the Regional Assessment lists of fish species (RAL) and Regional Bycatch lists of fish species (RBL)

WKFIBRE follows up from the comprehensive species list (CSL) compiled at WKCOFIBYC. WKFIBRE proposes an update of the CSL for the inclusion of additional species based on recent new information available to North-East Atlantic Fisheries Commission (NEAFC)[2] and subsequent adoption of new management measures in 2023 and 2024, and the inclusion of the Norwegian Red List for Species published by the Norwegian Biodiversity Information Centre (Artsdatabanken)[3] (see also Dhainaut *et al.* 2023).

2.1 Norwegian Red List for Species

The Norwegian Red List for Species uses the same categories, criteria and guidelines as the International Union for Conservation of Nature (IUCN) Red List of Threatened Species but is focused on species established in Norway. For marine species, this includes the Greenland Sea, Barents Sea, Greater North Sea, Arctic Ocean and Norwegian Sea.

The most recent Norwegian Red List was published in 2021 (Artsdatabanken, 2021)), and fish species were evaluated by a committee of eight experts. For this report, fish species are included if their main habitat is saltwater. This includes the Arctic lamprey (*Lethenteron camtschaticum*), sea lamprey (*Petromyzon marinus*), European eel (*Anguilla anguilla*) and Atlantic salmon (*Salmo salar*, see Table 2.1). Classifications are also provided from the two previous evaluations in 2015 and 2010.

Table 2.1 List of fish species included in the Norwegian Red List for Species including classification status (2010, 2015, 2021)

Scientific name	Common name	Category		
		2010	2015	2021
Anguilla anguilla (Linnaeus, 1758)	Common eel	CR	VU	EN
Boreogadus saida (Lepechin, 1774)	Polar cod	LC	NT	EN
Cetorhinus maximus (Gunnerus, 1765)	Basking shark	EN	EN	EN
Clupea pallasii Valenciennes, 1847	Pacific herring	-	NT	EN
Cyclopteropsis mcalpini (Fowler, 1914)	Arctic lumpsucker	DD	DD	DD

[2] https://www.neafc.org/managing_fisheries/measures/current

[3] https://artsdatabanken.no/

Dipturus intermedius (Parnell, 1837)	Flapper skate	CR	CR	CR
Dipturus nidarosiensis (Storm, 1881)	Norwegian skate	NT	DD	VU
Gadus chalcogrammus Pallas, 1814	Alaska pollock	NT	DD	NT
Lamna nasus (Bonnaterre, 1788)	Porbeagle	VU	VU	VU
Lethenteron camtschaticum (Tilesius, 1811)	Arctic lamprey	DD	NT	VU
Leucoraja fullonica (Linnaeus, 1758)	Shagreen ray	NT	DD	CR
Molva dypterygia (Pennant, 1784)	Blue ling	EN	EN	EN
Petromyzon marinus Linnaeus, 1758	Sea lamprey	LC	NT	NT
Salmo salar Linnaeus, 1758	Atlantic salmon	LC	LC	NT
Sebastes norvegicus (Ascanius, 1772)	Atlantic redfish	EN	EN	EN
Somniosus microcephalus (Bloch & Schneider, 1801)	Greenland shark	NT	DD	NT
Squalus acanthias Linnaeus, 1758	Spurdog (spiny dogfish)	CR	EN	VU

2.2 WKCOFIBYC criteria and WKFIBRE evaluation

WKCOFIBYC suggested a number of criteria to either qualify or disqualify species onto regional lists. The spatial scope of WKFIBRE has been limited to only include the ICES area in the North-east Atlantic and Baltic Sea (i.e. the Mediterranean Sea was excluded). This is reflected in the names of respective lists which are **ecoregion species lists (ESLs)** and **ecoregion fish of bycatch relevance lists (EBLs),** instead of being called "regional lists".

Below is the set of WKCOFIBYC criteria, the respective evaluation from WKFIBRE about keeping or removing them, and the rationale for those decisions. The detailed explanations, rationale and dependencies are shown in Section 4 in Table 4.1 and 4.2.

a. Criteria from WKCOFIBYC that were retained:

i. Disqualifying criterion: Species categorised as LC or NT in the European Red List of marine fishes (Nieto *et al.* 2015).

ii. Disqualifying criterion: Non-indigenous species introduced for fisheries/aquaculture or by accident

b. Criteria from WKCOFIBYC that were amended:

i. Disqualifying criterion from WKCOFIBYC: Stocks already advised upon by a relevant body, note this does not include ICES Category 5/6 stocks, where a species is only assessed in a given ecoregion in either of these categories. The reasoning behind this decision is that stocks that are exclusively assessed in these categories and are of qualifying species (i.e., species included in RAL) are by definition bycatch species and are not of commercial importance. It is assumed that if these species were of commercial

importance and not ETP species, they would be assessed in ICES categories 1–4. It should also be noted that many of the species in this situation are ones for which ICES gives status advice but not catch opportunity advice. Thus, there is no conflict between advice ICES is giving elsewhere on and advice ICES may provide on bycatch.

→ Amendment by WKFIBRE: This criterion aims to exclude all stocks that are already assessed elsewhere, as these stocks are generally not bycatch. This corresponds to most of the stocks of categories 1 to 4 in ICES. For assessments from other relevant bodies, stocks should only be excluded if at least a stock size indicator is provided. This assumes that for assessments, all available catch data, i.e. landings and discards from all fishing operations (target and bycatch) will be included. If a stock is assessed under category 1 to 4 but information is missing (i.e. discards), respective stocks should be flagged and will be addressed at a latter filtering stage under the exemption criteria for inclusion based on expert judgement. This is not applicable for stocks of categories 5 and 6, for which little information is available. WKFIBRE recognizes many commercial stocks are currently under category 5 or 6 and might not be excluded at that step.

Now: "Stocks with assessment that provides a stock size indicator by any relevant scientific body"

ii. Disqualifying criterion from WKCOFIBYC: Stocks that are not relevant to conservation/biodiversity issues in that area, including freshwater
→ Amendment by WKFIBRE: the reference to the relevance of conservation/biodiversity issues was removed and simplified.

Now: "Species only occur in freshwater"

iii. Qualifying criterion from WKCOFIBYC: Not advised upon anywhere and listed as Data Deficient (DD) on any relevant red lists.

→ this criterion was combined with the next criterion (b.iv)

iv. Qualifying criterion from WKCOFIBYC: Very data poor species for which any data point is informative in itself

→ combined with previous criterion

Now: "Listed as Data Deficient (DD) on any relevant conservation lists or very data poor species"

c. Criteria by WKCOFIBYC that were removed:

i. Qualifying criterion from WKCOFIBYC: Species subject to strict protection on the Habitats Directive (Annex IV), Appendix I of CMS or CITES.

→ WKFIBRE decided to remove this as a qualifying criterion as this should have been included already at the CSL compilation step

ii. Disqualifying criterion from WKCOFIBYC: Stock is outside the spatial/bathymetric range of current fisheries

→ this criterion was considered hard to define quantitatively.

iii. Qualifying criterion from WKCOFIBYC: Large megafauna fish and sharks which are encountered rarely but for which approaches as applied for marine mammals can be used e.g. *Cetorhinus maximus*

→ if these are ETP species, that is, species of conservation concern, they should be included in the updated CSL and retained through the process until the ESLs at least. WKFIBRE decided to remove this as a qualifying criterion as this should have been included already at the CSL compilation step.

iv. Qualifying criterion from WKCOFIBYC: Does the bycatch information provide potentially important information on the sites of occurrence?

→ this seems like a very subjective criterion which will be difficult to implement. Species that are very data poor will be added under the data inclusion criterion and species with assessments, but insufficient data will be added under a new criterion on data/assessment issues, see Section 3. WKFIBRE decided to remove this as a qualifying criterion.

v. Qualifying criterion from WKCOFIBYC: Does the bycatch information provide useful quantitative data on bycatch rates?

→ this seems like a very subjective criterion which will be difficult to implement. If bycatch information is used in the assessment, then it should be requested via the Working Groups and flagged as being a data/assessment issue if it is not available, see c.iv and Section 3. WKFIBRE decided to remove this as a qualifying criterion.

3 ToR b) If applicable, propose new/alternative criteria for establishing fish species lists as per ToR a.

WKFIBRE added a criterion to exclude any species not occurring in the ICES area (FAO area 27). This is done by comparing the CSL (ICES, 2021) against a list of fish species in the ICES area (such list, if not already available, will need to be compiled).

WKCOFIBYC discussed possible criteria to best consider deep-water species. However, an agreement on how to best consider the particularities of deep-water fish was not reached. WKFIBRE therefore suggested two additional inclusion criteria based on vulnerable life history traits and species/stocks having data/assessment issues, which could warrant the inclusion of those relevant species.

Figure 3.1 below summarises the retained, amended and new criteria used to compile the ESLs and EBLs. A more detailed summary is provided in Section 2.

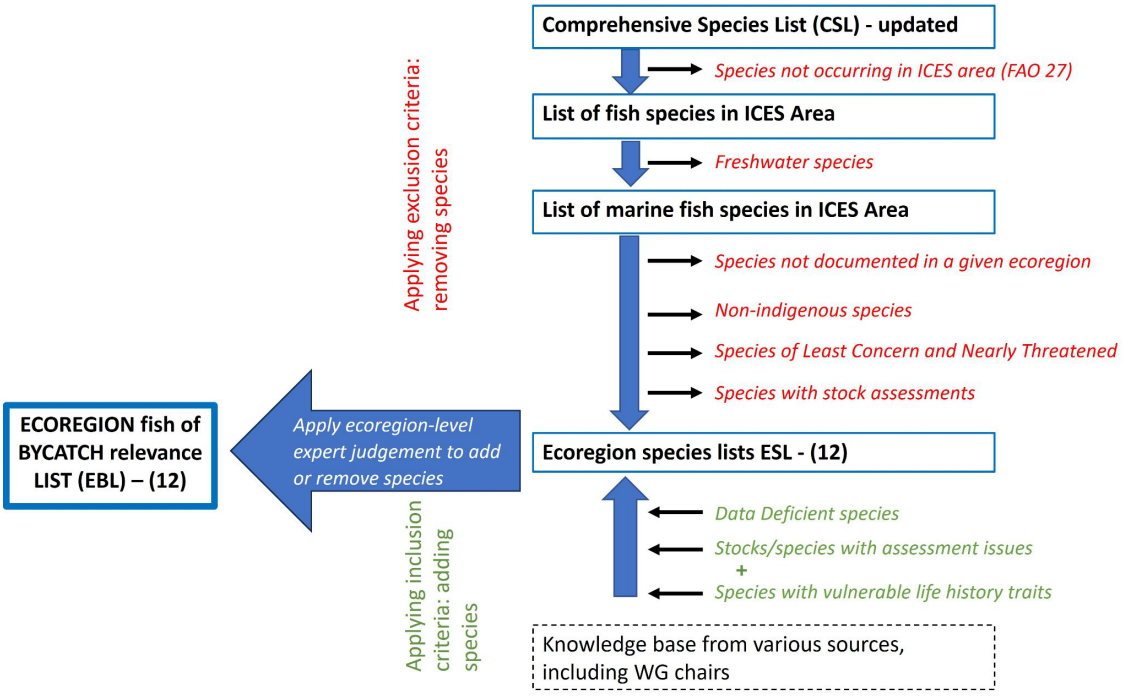

Figure 3.1 Flow chart indicating the different exclusion (red) and inclusion (green) criteria agreed by WKFIBRE. Exclusion criteria are applied successively before the inclusion criteria.

4 ToR c) Based on outcomes of ToR a and b, finalise the criteria for inclusion of fish to RAL and RBL.

In total, 9 criteria (6 exclusion and 3 inclusion) were agreed by WKFIBRE, which start from the CSL and then apply first a round of species exclusions for all ecoregions combined. This is followed by a round of species exclusions for all ecoregions and a final round of species inclusions per ecoregion. The resulting products are **12 ecosystem species lists (ESLs)**. All steps that can be automated are now implemented in the transparent assessment framework (TAF), which includes all steps from the CSL until the start of the inclusion round as this requires customised species lists which will need to be provided first. A final review by ecoregion experts will ensure that only ETP species of bycatch relevance are included in the **12 ecoregion fish of bycatch relevance lists (EBLs)**. WKFIBRE participants felt that this last expert step was necessary as the final review by ecoregion experts ensures that the final EBLs in fact include ETP species of bycatch relevance. There are several instances where vulnerable ETP species might be missing from a given ecoregion list or species of commercial interest with a stock assessment can remain on the list, so this final step is crucial.

4.1 The WKFIBRE workflow

The proposed workflow and criteria for the revision of ICES ETP fish species list of bycatch relevance is described below and illustrated in Figure 4.1.

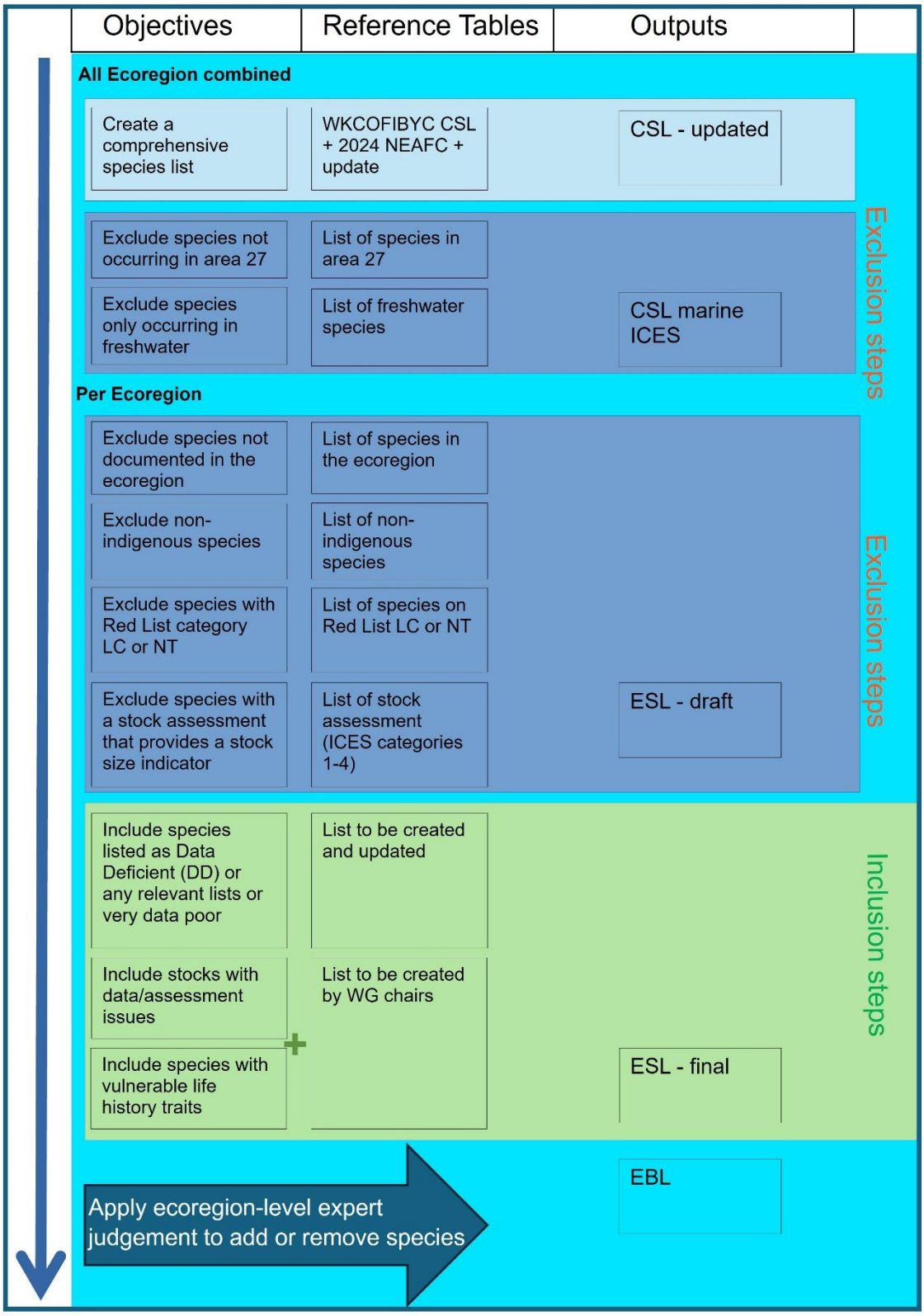

Figure 4.1. Proposed workflow and criteria for the revision of the ICES ETP fish species list of bycatch relevance.

Step 1: Comprehensive Species List (CSL) compilation. The species list from the workshop on fish of conservation and bycatch relevance (WKCOFIBYC), that took place in 2020, was taken as a basis. The CSL was amended to incorporate the recent new information (NEAFC

recommendations from 2023 and 2024 for several species which are not covered elsewhere; https://www.neafc.org/managing_fisheries/measures/current) and include the Norwegian Red List for Species. No other changes were implemented in the initial list of species.

Step 2: List of fish species within the ICES area, FAO 27. Species not occurring in Area 27 to be removed/filtered from the CSL list.

Step 3: Application of the proposed exclusion criteria 1-5 (Table 4.1), to be executed sequentially; each criterion resulting in species exclusion in case a given criterion is met. The exclusion criterion 1 should be applied at the ICES area, FAO 27, level. Criteria 2 to 5 (see Table 4.1 below) require further input at the ecoregion-level to fully implement the WKFIBRE-proposed approach.

Step 4: Application of the proposed inclusion criteria 6-7 (Table 4.2), to be executed sequentially; each criterion resulting in species inclusion in case a given criterion is met. This step results in Ecoregion Species Lists (ESL).

Step 5: Application of expert judgement to add or remove fish species from the ecoregion final lists. This step results in Ecoregion Bycatch Lists (EBL).

Note: steps 2 and 3 are automated and implemented within ICES TAF; see the section below on "implementation in TAF" for further details.

Table 4.1 Proposed exclusion criteria of ETP fish species of bycatch relevance to be applied at Step 3 above. Criteria labelled with # are retained or amended from WKCOFIBYC, new criteria suggested in WKFIBRE are indicated with the symbol '¤'.

	Criterion	Explanation	Rationale	Dependency
All ecoregions combined				
1	Species only occur in freshwater #	For each ecoregion, if the species only occurs in freshwater, it should be excluded.	Only ICES ecoregions are considered. Freshwater species not inhabiting ICES ecoregions are outside the scope of these lists.	List of freshwater species
Per ecoregion				
2	Species not documented for the ecoregion ¤	Species not occurring in that ecoregion		List of species per ecoregion

	Criterion	Explanation	Rationale	Dependency
3	Non-indigenous species #	This is intended to exclude all non-indigenous species independent of the human activity that resulted in their introduction (i.e. accidental releases or deliberate introductions for fisheries/ aquaculture)	Non-indigenous species are considered as a potential threat to marine biodiversity and ecosystem functioning. There are several legal and policy instruments in the EU and non-EU countries to combat new species invasions and mitigate impacts on the already existing non-indigenous species. *	List of non-indigenous species per ecoregion
4	Species having a red listing of LC or NT #	The most appropriate lowest spatial scale of red-list assessments should be chosen here. First point of reference should be the European Red List of marine fishes, however, if this list is considered to be outdated, the best available information should be used, e.g. IUCN Red Lists etc. The order of consideration is: European Red List of marine fishes, IUCN Red List Europe, IUCN Red List global	Those species are outside the scope of the ETP bycatch list. However, if the red-list evaluation lacks data and/or is considered out of date, certain species can be added under an inclusion criterion again.	Various red lists at different spatial scales.
5	Stocks with an assessment that provides a stock size indicator by any relevant scientific body #	This criterion aims to exclude all stocks that are already assessed. This corresponds to most of the stocks of categories 1 to 4 in ICES. For assessments from other relevant bodies, stocks should only be excluded if at least a stock size indicator is provided. ** This is not applicable for stocks of ICES categories 5 and 6.	Stocks with assessments should be excluded as they are assumed commercial and not ETP species, AND it is assumed that ALL catch data will at least be considered and collated.	List of stocks assessed by ICES under categories 1-4, stocks assessed by the International Commission for the Conservation of Atlantic Tunas (ICCAT) (and potentially also others) *Note: currently only ICES assessments are excluded following this criterion.*

* **European Commission, 2014. Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species. Official Journal of the European Union, 2014; L317/35. (Nov 4, 2014). http://eur-lex.europa.eu/eli/reg/2014/1143/oj; European Commission, 2020. EU Biodiversity Strategy for 2030. Bringing nature back into our lives. European Parliament resolution of 20 April 2012 on our life insurance, our natural capital: an EU biodiversity strategy to 2020 (COM/2020/380 final). https://eur-lex.europa.eu/resource.html?uri=cellar:a3c806a6-9ab3-11ea-9d2d-01aa75ed71a1.0001.02/DOC_1&format=PDF;**

****this assumes that for assessments, all available catch data, i.e. landings and discards from all fishing operations (target and bycatch) will be included. If a stock is assessed under category 1 to 4 but information is missing (i.e. discards), then the respective stocks should be flagged and will be addressed under the exemption criteria for inclusion based on expert judgement.**

Table 4.2 Proposed inclusion criteria of fish species of bycatch relevance to be applied on the Step 4 workflow above. Criteria indicated with # are retained or amended from WKCOFIBYC, new criteria suggested in WKFIBRE are indicated with the symbol '¤'.

	Criterion	Explanation	Rationale	Dependency
6	Listed as a Data Deficient (DD) species, species included to any relevant conservation lists or very data poor species #	Include species for which any data point is informative in itself e.g., *S. squatina,* or species which are DD on any relevant lists, e.g., marbled stingray *Dasyatis marmorata*	Those species often fall off red lists as there are not enough data to complete a status evaluation (Bland *et al.* 2025, Borgelt *et al.* 2022)	List of "very data poor" species and list of DD species
7	Stocks/species with data/assessment issues # AND vulnerable life history traits	Stocks with known issues/limitations in the current data collection or stock assessment which additionally have vulnerable life history traits*.	Stocks and species with known issues in their assessment and vulnerable life history traits can be candidates to bycatch assessments.	List of flagged stocks from Expert Groups and life history vulnerability

*** Those are defined based on low fecundity, long lifespan, slow growth etc., e.g. most deep-sea species. Life history traits to be considered are: 1) size at birth, 2) growth pattern, 3) age at maturity, 4) size at maturity, 5) number/size/sex ratio of offspring, 6) age and size specific reproductive investments, 7) age and size specific mortality schedules, and 8) length of life.**

4.2 Implementation in the ICES Transparent Assessment Framework (TAF)

The Transparent Assessment Framework (TAF) is an online open resource developed with a focus on yearly ICES fish stock and mixed fisheries assessments, as well as other types of assessments feeding into ICES advice on topics such as contaminants, benthic indicators, fishing impacts, survey indices, catch estimates, ecosystem and fisheries overviews among others. This open framework enables anyone to easily find, reference, download, and run the assessment from any stage in the process leading to the information contained in published ICES advice.

Based on the workflow (Figure 3.1), an R script following the TAF framework was built to automatically produce the Ecoregion fish species lists (ESL). The R script works based on a comprehensive species list (CSL) as defined by WKCOFIBYC amended with recent new information (see Section 2).

Reference tables are then created based on previous information from WKCOFIBYC.

Two reference tables combine all ecoregions:

- list the species in the area 27
- list of freshwater species

Four reference tables are at the ecoregion scale (i.e. 12 separate lists exist, one per each ecoregion):

- list of species documented in the ecoregion
- list of non-indigenous species
- list of species defined as Least Concern or Nearly Threatened in the European or IUCN red list
- list of species for which one or several stocks have an assessment providing a stock size indicator in the ecoregion

All these reference tables are built to **exclude** species from the initial CSL. They are currently derived from previous work completed by WKCOFIBYC and might not be fully accurate or complete. The aim of WKFIBRE was to provide an open framework that is easily reproducible and automatable. The framework works as an exclusion process, such that the excluded species cannot be included again during the steps where exclusion criteria are applied sequentially (step 1-3 Table 4.1). The reference tables need to be checked and updated regularly. It should be the responsibility of identified working groups to update the lists.

ICES web services[4] were used to create the list of assessed stocks and link them with ecoregion and species. Currently, stock assessments done by other scientific bodies, such as ICCAT, Scientific, Technical and Economic Committee for Fisheries of the European Commission, and Indian ocean Tuna Commission are not considered.

Step 4 incorporates species based on the inclusion criteria defined in Table 4.2. This is not yet implemented as no reference tables were available for the two inclusion criteria agreed by WKFIBRE.

The outputs of the R script are 12 excel spreadsheets containing the CSL table, the reference tables to check where a given species was excluded and the ecoregion fish list after all the exclusion steps were run.

The lists are not provided in this document as they are neither up to date nor static and the CSL and reference tables need to be updated regularly. However, the resulting 12 EBLs should be accessible and will be updated and published as an Annex to the ICES Roadmap for bycatch of endangered, threatened, and protected species.

Link to the repository: https://github.com/ices-taf/wk_WKFIBRE

Please note that access to the repository is currently restricted and requires authorization from the ICES Secretariat.

[4] https://www.ices.dk/data/tools/Pages/WebServices.aspx

5 Way forward and the process for finalising ecoregion species lists

The ecoregion draft lists of ETP fish species after the application of criteria 1-5 were delivered to ACOM to be primarily addressed and checked by ACOM ecoregion leads of Fisheries Overviews. Application of criteria 2-5 should be checked (and validated) at the ecoregion level, as well as applied again after the CSL has been properly updated to reflect changes in species' conservation status.

It has been previously agreed that an advisory process will be established with ADG (ADGFIBRE) and ACOM web conference (WCFIBRE) to finalise the species lists. The final list of species will be published as an Annex to the ICES Roadmap for bycatch of ETP species.

It should be noted that the proposed steps 4 and 5 were not implemented by WKFIBRE in the new draft species lists (ESL) delivered to ACOM. These steps need to be discussed at ADGFIBRE and finally agreed by ACOM web conference (WCFIBRE).

6 Recommendations

1. To review and revise the underlying principles and methods developed by WKCOFIBYC to compile the lists. Review the relevant species list to compile and validate i) CSL, ii) list of fish species in ICES area, and iii) list of marine fish species in ICES area. Task for ACOM to establish WKFIBRE2.
2. To compile species lists by ecoregions to address the suggested inclusion criteria. Task to stock assessment expert groups.
3. Seek ecoregion-level input to exclusion criteria: species not documented for the ecoregion (task to ACOM Fisheries Overviews leads) and non-indigenous species (task to WGITMO).
4. Full implementation of the workflow in TAF (see Figure 4.1 in this report). Task for ACOM, possibly through WKFIBRE2 (see recommendation 1).

Reference list

Artsdatabanken (2021, 24. november). Norsk rødliste for arter 2021. http://www.artsdatabanken.no/lister/rodlisteforarter/2021/.

Bland, L.M., Collen, B.E.N., Orme, C.D.L. and Bielby, J.O.N., 2015. Predicting the conservation status of data-deficient species. *Conservation Biology*, *29*(1), pp.250-259.

Borgelt, J., Dorber, M., Høiberg, M.A. and Verones, F., 2022. More than half of data deficient species predicted to be threatened by extinction. *Communications biology*, *5*(1), p.679.

Dhainaut, J. P. (2023). *Rethinking the Red List: A Document Analysis of the 2021 Norwegian Red List* (Master's thesis).

ICES. 2024. ICES Roadmap for Bycatch on Endangered, Threatened, and Protected (ETP) Species. ICES Convention, policies, and strategy. 48 pp. https://doi.org/10.17895/ices.pub.26003467

Nieto, A., Ralph, G.M., Comeros-Raynal, M.T., Kemp, J., García Criado, M., Allen, D.J., Dulvy, N.K., Walls, R.H.L., Russell, B., Pollard, D., García, S., Craig, M., Collette, B.B., Pollom, R., Biscoito, M., Labbish Chao, N., Abella, A., Afonso, P., Álvarez, H., Carpenter, K.E., Clò, S., Cook, R., Costa, M.J., Delgado, J., Dureuil, M., Ellis, J.R., Farrell, E.D., Fernandes, P., Florin, A-B., Fordham, S., Fowler, S., Gil de Sola, L., Gil Herrera, J., Goodpaster, A., Harvey, M., Heessen, H., Herler, J., Jung, A., Karmovskaya, E., Keskin, C., Knudsen, S.W., Kobyliansky, S., Kovačić, M., Lawson, J.M., Lorance, P., McCully Phillips, S., Munroe, T., Nedreaas, K., Nielsen, J., Papaconstantinou, C., Polidoro, B., Pollock, C.M., Rijnsdorp, A.D., Sayer, C., Scott, J., Serena, F., Smith-Vaniz, W.F., Soldo, A., Stump, E. and Williams, J.T. 2015. *European Red List of Marine Fishes*. Luxembourg: Publications Office of the European Union. https://www.iucnredlist.org/resources/nieto2015

Annex 1: List of participants

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Annex 2: Resolutions

Workshop on FIsh of Bycatch RElevance (WKFIBRE)

2024/WK/DSTSG The Workshop on FIsh of Bycatch RElevance (WKFIBRE), chaired by Claudia Junge*, Norway, Henn Ojaveer*, ICES, and Youen Vermard*, France, will meet online on 28-31 October 2024 to:

a) Review and evaluate the criteria established at WKCOFIBYC[5], that were applied to develop:
   - Regional Assessment lists of fish species (RAL)
   - Regional Bycatch list of fish species (RBL)

b) If applicable, propose new/alternative criteria for establishing fish species lists as per ToR a.

c) Based on outcomes of ToR a and b, finalise the criteria for inclusion of fish to RAL and RBL.

WKFIBRE will report by 13 December 2024 for the attention of ACOM and SCICOM.

Supporting Information

Priority	High.
Scientific justification	ICES has revised its Roadmap for Endangered Threatened and Protected (ETP) species bycatch[6] in 2024. As agreed by ACOM, the lists of ETP species of bycatch relevance for mammals, seabirds and fish (Annexes 1-2 in the roadmap) should be revised in early 2025. WKFIBRE will gather the necessary expertise and develop criteria for the establishment of the revised lists of fish species of bycatch relevance by ecoregion.
Resource requirements	None, besides meeting facilities.
Participants	It is envisaged that around 15 people might attend the meeting.
Secretariat facilities	SharePoint and meeting facilities, ICES data centre expertise, report formatting.
Financial	No financial implications.
Linkages to advisory committee	ACOM, SCICOM.
Linkages to other committees groups	WGBYC, WGEF, WGDEEP, WGECO
Linkages to other organisations	EC, OSPAR, HELCOM, ICCAT-Bycatch Group

[5] ICES (2021). Workshop on Fish of Conservation and Bycatch Relevance (WKCOFIBYC). ICES Scientific Reports. Report. https://doi.org/10.17895/ices.pub.8194

[6] ICES. 2024. ICES roadmap for bycatch on endangered, threatened, and protected (ETP) species. ICES Convention, policies, and strategy.

Annex 3: List of abbreviations and acronyms

CSL - Comprehensive Species List

EBL - Ecoregion fish of Bycatch relevance List

ESL - Ecoregion Species List

ETP – Endangered, Threatened and Protected