



**ICES**

International Council for  
the Exploration of the Sea

**CIEM**

Conseil International pour  
l'Exploration de la Mer

12 October 2023

---

## 2023 FRSG Expert Group ToRs

### Contents

|  |    |
|--|----|
| Generic ToRs for Regional and Species Working Groups.....  | 3  |
| AFWG – Arctic Fisheries Working Group .....  | 5  |
| HAWG – Herring Assessment Working Group for the Area South of 62°N .....   | 5  |
| NIPAG – Joint NAFO/ICES Pandalus Assessment Working Group .....  | 6  |
| NWWG – Northwestern Working Group.....   | 6  |
| WGAMEEL - Working Group on American Eel.....   | 7  |
| WGBAST – Baltic Salmon and Trout Assessment Working Group.....   | 10 |
| WGBFAS – Baltic Fisheries Assessment Working Group .....   | 11 |
| WGBIE– Working Group for the Bay of Biscay and Iberian waters Ecoregion.....                                     | 11 |
| WGCSE – Working Group for the Celtic Seas Ecoregion.....   | 11 |
| WGDEEP – Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources .....                       | 12 |
| WGDIAD - Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species..... | 12 |
| WGEEL – Joint EIFAAC/ICES/GFCM Working Group on Eels.....  | 15 |
| WGEF – Working Group on Elasmobranch Fishes .....  | 16 |
| WGHANSA – Working Group on Southern Horse Mackerel Anchovy and Sardine .....                                     | 17 |
| WGHARP – Joint ICES/NAFO/NAMMCO Working Group on Harp and Hooded Seals .....                                     | 18 |
| WGMIXFISH-ADVICE – Working Group on Mixed Fisheries Advice .....   | 19 |
| WGMIXFISH-METHODS - Working Group on Mixed Fisheries Advice Methodology  | 20 |
| WGNAM - Working Group on Northwest Atlantic Mackerel Ecology and Assessment                                      | 21 |
| WGNAS – Working Group on North Atlantic Salmon.....  | 24 |
| WGNSSK – Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak.....                  | 26 |
| WGTAFGOV - Working Group on Transparent Assessment Framework Governance ..                                       | 26 |

|   |    |
|---|----|
| WGTRUTTA - Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout ( <i>Anadromous Salmo trutta</i> ) Populations.....  | 26 |
| WGWIDE– Working Group on Widely Distributed Stocks .....  | 31 |
| WKMSSEDEV – Workshop on MSE development.....  | 31 |
| WKBCOD - Benchmark Workshop for Northern Shelf cod stocks.....  | 32 |
| WKBGREENCOD - Benchmark Workshop on three Greenland cod ( <i>Gadus morhua</i> ) stocks.....   | 34 |
| WKTAF– Workshop on Training for the Transparent Assessment Framework.....   | 35 |
| WKBELASMO 2023- Benchmark Workshop for selected elasmobranch stocks.....  | 36 |
| WKSIDAC2 - Second Workshop on Stock Identification and allocation of catches of herring to stocks .....   | 37 |
| WKRRCOD - Workshops on research needs and a roadmap for further research on cod in the northern shelf seas (including cod in the Celtic Seas).....  | 40 |
| WKBSEALS 2023 - Benchmark Workshop for harp and hooded seals .....  | 41 |
| WKBNORTH - Benchmark workshop on Greenland halibut and redfish stocks .....   | 42 |
| WKB SALMON - Benchmark Workshop on Atlantic salmon ( <i>Salmo salar</i> ) in the North Atlantic.....  | 44 |
| WKRRCSS2 - second Workshop on the Research Roadmap for Channel and Celtic Seas Sprat .....  | 46 |
| WKBSEABASS 2023 – Benchmark Workshop on Seabass stocks.....   | 47 |
| WKLIFE XI - The Workshop on the Development of Quantitative Assessment Methodologies based on Life-history traits, exploitation characteristics, and other relevant parameters for data-limited stocks.....                         | 49 |
| WKRFSFA - Workshop on Recreational Fisheries in Stock Assessments (WKRFSFA) ....  | 51 |
| WKBMSYSPICT2 – Benchmark workshop 2 on development of MSY advice using SPiCT .....  | 53 |
| WKMIXFISH2 – Scoping workshop on next generation of mixed fisheries advice 2.....   | 54 |
| WKFO2 - Workshop on Fisheries Overviews data and figures .....  | 55 |
| WKPANDLTMSE - Workshop on a long-term management strategy evaluation for the Northern shrimp ( <i>Pandalus borealis</i> ) in divisions 3.a and 4.a East (Skagerrak and Kattegat and northern North Sea in the Norwegian Deep) ..... | 56 |
| WKSANDEEL - Benchmark Workshop on Sandeel ( <i>Ammodytes</i> spp.) in 2022.....   | 57 |
| WKAFPA - Workshop on accounting for fishers and other stakeholders’ perceptions of the dynamics of fish stocks in ICES advice .....   | 58 |
| WKSMEEL – Workshop on the development of a spatial database and model for eel ...   | 60 |
| WKEVALMAC– Workshop on the evaluation of NEA mackerel stock components.....   | 61 |
| WGRFS – Working Group on Recreational Fisheries Surveys (WGRFS) .....   | 62 |

|   |    |
|---|----|
| WKREBUILD2 – Workshop on guidelines and methods for the design and evaluation of rebuilding plans for category 1-2 stocks ..... | 66 |
| WKING2 – Workshop 2 on innovative fishing gear .....  | 68 |
| WKRRBWC – Workshop on a Research Roadmap for Bristol and Western Channel Herring .....  | 69 |

## Generic ToRs for Regional and Species Working Groups

*Approved in Resolutions meeting on 9 November 2022*

The following ToRs apply to: AFWG, HAWG, NWWG, NIPAG, WGWISE, WGBAST, WGBFAS, WGNSSK, WGCSE, WGDEEP, WGBIE, WGEEL, WGEF, WGHANSA and WGNAS.

### **The working group should focus on:**

- a) Consider and comment on Ecosystem and Fisheries Overviews with a focus on:
  - i) identifying and correcting mistakes and errors (both in the text, tables and figures), and
  - ii) proposing concrete evidence-based input that is considered essential for the advice but is currently under-developed or missing (with references and Data Profiling Tool entries, as appropriate).

*The input will feed into the annual updates of the overviews. Delivery of contributions other than those outlined above is also welcomed but will be utilised during the revision process (around every 5 years).*

- b) Conduct an assessment on the stock(s) to be addressed in 2023 using the method (assessment, forecast or trends indicators) as described in the stock annex; - complete and document an audit of the calculations and results; and produce a **brief** report of the work carried out regarding the stock, providing summaries of the following where relevant:
  - i) Input data and examination of data quality; in the event of missing or inconsistent survey or catch information refer to the ACOM document for dealing with missing data and the linked template that formulates how deviations from the stock annex are to be [reported](#).
  - ii) Where misreporting of catches is significant, provide qualitative and where possible quantitative information and describe the methods used to obtain the information;
  - iii) For relevant stocks (i.e., all stocks with catches in the NEAFC Regulatory Area), estimate the percentage of the total catch that has been taken in the NEAFC Regulatory Area in 2022.
  - iv) For category 3 and 4 stocks requiring new advice in 2023, implement the methods recommended by WKLIFE X (e.g. SPiCT, rfb, chr, rb rules) to replace the former 2 over 3 advice rule (2 over 5 for elasmobranchs). MSY reference points or proxies for the category 3 and 4 stocks ([guidelines](#))

- v) Evaluate spawning stock biomass, total stock biomass, fishing mortality, catches (projected landings and discards) using the method described in the stock annex;
  - 1) for category 1 and 2 stocks, in addition to the other relevant model diagnostics, the recommendations and decision tree formulated by WKFORBIAS (see Annex 2 of [https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2020/WKFORBIAS\\_2019.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2020/WKFORBIAS_2019.pdf)) should be considered as guidance to determine whether an assessment remains sufficiently robust for providing advice.
  - 2) If the assessment is deemed no longer suitable as basis for advice, provide advice using an appropriate Category 2- 5 approach as described in ICES technical guidance for harvest control rules and stock assessments for stocks in categories 2 and 3 or ICES.
  - 3) If the assessment has been moved to a Category 2-5 approach in the past year consider what is necessary to move back to a Category 1 and develop proposal for the appropriate benchmark process.
- vi) Catch scenarios for the year(s) beyond the terminal year of the data for the stocks for which ICES has been requested to provide advice on fishing opportunities;
- vii) Historical and analytical performance of the assessment and catch options with a succinct description of associated quality issues. For the analytical performance of category 1 and 2 age-structured assessments, report the mean Mohn's rho (assessment retrospective bias analysis) values for time series of recruitment, spawning stock biomass, and fishing mortality rate. The WG report should include a plot of this retrospective analysis. The values should be calculated in accordance with the "Guidance for completing ToR viii) of the Generic ToRs for Regional and Species Working Groups - Retrospective bias in assessment" and reported using the ICES application for this purpose.
- c) Produce a first draft of the advice on the stocks under considerations according to ACOM guidelines.
- d) Review progress on benchmark issues and processes of relevance to the Expert Group.
  - i) update the benchmark issues lists for the individual stocks in SID;
  - ii) review progress on benchmark issues and identify potential benchmarks to be initiated in 2024 for conclusion in 2025;
  - iii) determine the prioritization score for benchmarks proposed for 2024–2025;
  - iv) as necessary, document generic issues to be addressed by the Benchmark Oversight Group (BOG)
- e) Prepare the data calls for the next year's update assessment and for planned data evaluation workshops;
- f) Identify research needs of relevance to the work of the Expert Group.
- g) Review and update information regarding operational issues and research priorities on the Fisheries Resources Steering Group SharePoint site.

- h) If not completed previously, complete the audit spread sheet ‘Monitor and alert for changes in ecosystem/fisheries productivity’ for the new assessments and data used for the stocks. Also note in the benchmark report how productivity, species interactions, habitat and distributional changes, including those related to climate-change, could be considered in the advice.
- i) Deliver conservation status advice in accordance with the “Technical Guidelines on the conservation status advice”. The advice is only to be given when conservation aspects were identified and where clear, demonstrable management action can be recommended for any non-catch anthropogenic pressure. It can also be used to highlight clear demonstrable sensitivity to climate change. The qualification required to show clear, demonstrable management action is high. Avoid generic statements that are of no specific application to management.
- j) Update SAG and SID with final assessment input and output

Information of the stocks to be considered by each Expert Group is available [here](#).

### **AFWG – Arctic Fisheries Working Group**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG02      The **Arctic Fisheries Working Group** (AFWG), chaired by Daniel Howell, Norway, will meet in ICES HQ 17–21 April 2023 to:

- a) Address generic ToRs for Regional and Species Working Groups, for all stocks except the Barents Sea capelin, which will be addressed at a meeting in the autumn;
- b) For Barents Sea capelin oversee the process of providing intersessional assessment;
- c) Conduct reviews as required of any time-series computed using the STOX and ECA open source software for use in assessment in the Barents Sea.

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

AFWG will report by 8 May 2023 and TBD October 2023 for Barents Sea capelin for the attention of the Advisory Committee.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert’s country can attend this Expert Group*

### **HAWG – Herring Assessment Working Group for the Area South of 62°N**

*Approved on the Resolutions forum on 17 January 2023*

2022/2/FRSG03      The **Herring Assessment Working Group for the Area South of 62°N** (HAWG), chaired by Cecilie Kvamme, Norway, and Aaron Brazier, UK, will meet:

In ICES HQ, Copenhagen, Denmark 24–26 January 2023 to:

- a) Compile the catch data of sandeel in assessment areas 1r, 2r, 3r, 4, 5r, 6, and 7r and address generic ToRs for Regional and Species Working Groups that are specific to sandeel stocks in the North Sea ecoregion;

and in ICES HQ, Copenhagen, Denmark 14–22 March 2023 to:

- b) compile the catch data of North Sea and Western Baltic herring on 14–15 March;
- c) address generic ToRs for Regional and Species Working Groups on 16–23 March for all other stocks assessed by HAWG.

The assessments will be carried out based on the Stock Annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

HAWG will report by 10 February (sandeel), 21 April (sprat) and 28 April (herring) 2023 for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

#### **NIPAG – Joint NAFO/ICES Pandalus Assessment Working Group**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG04 The **Joint NAFO/ICES Pandalus Assessment Working Group** (NIPAG), chaired by Fabian Zimmermann, Norway (ICES Chair) and Mark Simpson, Canada (NAFO Chair), will meet from 9 to 11 May 2023 in ICES HQ Copenhagen Denmark to:

- a) Address generic ToRs for Regional and Species Working Groups for Northern shrimp in divisions 3.a and 4.a East stock.
- b) Address generic ToRs for Regional and Species Working Groups for other NIPAG stocks.

NIPAG will report by 25 May 2023 for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

#### **NWWG – Northwestern Working Group**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG05 The **Northwestern Working Group** (NWWG), chaired by Teunis Jansen, Denmark, will meet in ICES HQ, Copenhagen, Denmark 24–28 April 2023 to:

- a) Address generic ToRs for Regional and Species Working Groups for all stocks, except stocks mentioned in ToRs c)

and in **October/November 2023 (dates to be decided in April 2023)** to:

- b) Address generic ToRs for Regional and Species Working Groups for Capelin (*Mallotus villosus*) in subareas 5 and 14 and Division 2.a west of 5°W, Cod (*Gadus morhua*) in Subdivision 5.b.1 (Faroe Plateau), Cod in Subdivision 5.b.2

(Faroe Bank,) Haddock (*Melanogrammus aeglefinus*) in Division 5.b (Faroes grounds) and Saithe (*Pollachius virens*) in Division 5.b (Faroes grounds).

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

NWWG will report by 15 May and 10 November 2023 for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## WGAMEEL – Working Group on American Eel

*Approved in November 2021 – Updated in September 2022*

2021/2/FRSG06 **Working Group on American Eel** (WGAMEEL), co-chaired by Thomas Pratt \*, Canada, and Kristen Anstead\*, USA, will be established, will work on ToRs, and generate deliverables as listed in the Table below.

|           | MEETING DATES         | VENUE  | REPORTING DETAILS  | COMMENTS (CHANGE IN CHAIR, ETC.) |
|-----------|-----------------------|--------|--|----------------------------------|
| Year 2022 | September 13-15, 2022 | Online | Interim report by 29 September 2022 to Fisheries Research Steering Group |                                  |
| Year 2023 | TBD                   | USA    | Interim report to Fisheries Research Steering Group                      |                                  |
| Year 2024 | TBD                   | Canada | Final report to Fisheries Research Steering Group                        |                                  |

## ToR descriptors

| TOR | DESCRIPTION  | BACKGROUND   | SCIENCE PLAN CODES        | DURATION        | EXPECTED DELIVERABLES                            |
|-----|--|--|---------------------------|-----------------|--|
|     | This should capture the objectives of the ToR  | Provide very brief justification, e.g. advisory need, links to Science Plan and other WGs  | Use codes (max 3 per ToR) | 1, 2 or 3 years | Specify what is to be provided, when and to whom |
| a   | Collate and evaluate data on American eel abundance, distribution, habitat, and biology from surveys and fisheries in Canada and the United States | Fishery-independent and fishery-dependent time series datasets available for various life stages (glass eels, elvers, yellow eels, silver eels) in both countries will be critically reviewed. While the primary focus will be on abundance time series, other types of data (distribution, habitat, biology) may also be important to consider. | 1.7, 1.8, 3.1             | Year 1          | Review paper                                     |

---

|   |   |   |               |                |              |
|---|---|---|---------------|----------------|--------------|
| b | <p>Assemble information on spatial population structure of growth-phase American eels and devise approaches to fill data gaps</p>   | <p>Growth-phase American eels are known to use all sheltered coastal (bay, estuary) and all accessible freshwater (river, stream, lake, pond) habitat types. However, knowledge of eel status is often based on habitat-specific series-of-opportunity (e.g. stream electrofishing, estuary seining), leaving data gaps in other habitats (lakes and ponds). This effort will search for previously unexploited data sources and draw on GIS-based modelling tools to advance a pan-habitat understanding of growth-phase American eel status and relative abundance.</p> | 1.7, 1.8, 3.1 | Years 1 & 2    | Review paper |
| c | <p>Enhance current understanding of eel spatial distribution, abundances, alternative management strategies, and appreciation of the cultural and social significance of eels by integrating existing Indigenous knowledge systems to complement current scientific knowledge</p> | <p>Recognizing the complexity of Indigenous knowledge systems (IKS) as distinct ways of knowing, IKS is becoming increasingly recognized for its contribution as a form of adaptive management that may enhance sustainable management of resources. However, few attempts to integrate scientific knowledge and IKS exist for eels. The WG will compile existing Indigenous knowledge for the purpose of enhancing current understanding and to improve the management and sustainability of eels.</p>   | 3.6, 7.1, 7.5 | Years 1, 2 & 3 | Review paper |

---



---

|   |  |  |     |             |  |
|---|--|--|-----|-------------|--|
| d | Compare and contrast modelling approaches used for European and American eels and identify data needs for these approaches                           | <p>Beginning in 2007, the European Union mandated member states to compare current European silver eel escapement in eel management units to estimated escapement under pristine conditions. However, this method has not been used to provide management advice, which is instead based on recruitment trends. The American eel has been assessed in US Atlantic states by a model based on fisheries-induced abundance changes, and in Canada's Maritimes Region by spawner-per-recruit analysis. The potential of these approaches to provide insight into American eel population dynamics and status will be examined in the context of current and potential future data availability.</p> | 4.3 | Years 2 & 3 | Review paper   |
| e | Identify potential stock assessment methods and management approaches that would be appropriate to use for fishery management and conservation needs | <p>International governance (i.e., stock assessment and management) remains undeveloped for the American eel, which is comprised of a single, panmictic population shared among many jurisdictions. Although there are concerted assessment and management efforts within each country, there is no formal binational organization overseeing this species between the two main users of the resource, Canada and the United States. The</p>   | 4.3 | Years 2 & 3 | Report to ICES on methods to improve American eel assessments. |

---

---

WG will propose methods that could improve assessment, management, and conservation of eels in both countries.

---

### Summary of the Work Plan

|        |  |
|--------|--|
| Year 1 | The WG will meet online to address primarily the first 3 TORs.   |
| Year 2 | The WG will meet online or face to face to address the 5 TORs.   |
| Year 3 | The WG will meet online or face to face to address primarily the last 2 TORs. The WG will review drafts of papers developed following the first 2 years. |

### Supporting information

|  |   |
|--|---|
| Priority                               | The current activities of this Group will lead ICES into issues related to the ecosystem effects of fisheries, especially with regard to the application of the Precautionary Approach. Consequently, these activities are considered to have a very high priority. |
| Resource requirements                  | The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resources required to undertake additional activities in the framework of this group is small.                         |
| Participants                           | The Group should be attended by some 20–25 members and guests.  |
| Secretariat facilities                 | None.   |
| Financial                              | No financial implications.  |
| Linkages to ACOM and groups under ACOM | There are no obvious direct linkages but developing the expertise could link to ACOM in the future.   |
| Linkages to other committees or groups | Interactions will be sought with WGEEL and WGFEA.   |
| Linkages to other organizations        | There are linkages to a number of organizations and institutions throughout North America and Europe, such as the Research Programme on European eel from the General Fisheries Commission for the Mediterranean.   |

## WGBAST – Baltic Salmon and Trout Assessment Working Group

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG06      The **Baltic Salmon and Trout Assessment Working Group** (WGBAST), chaired by Martin Kesler, Estonia, will meet in Riga, Latvia 22–30 March 2023 to:

- a ) Address relevant points in the Generic ToRs for Regional and Species Working Groups;

Material and data relevant for the meeting must be available to the group on the dates specified for the 2023 ICES data call.

WGBAST will report by 6 April 2023 for the attention of ACOM.

*Further specific terms of reference and/or workshops linked to WGBAST may arise.*

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WGBFAS – Baltic Fisheries Assessment Working Group**

*Approved in the Resolution Forum in January 2023*

2022/2/FRSG07            The Baltic Fisheries Assessment Working Group (WGBFAS), chaired by Kristiina Hommik, Estonia, will meet on 18-25 April 2023 in ICES HQ, Copenhagen, Denmark to:

- a) Address generic ToRs for Regional and Species Working Groups
- b) Review the main result from WGMIXFISH, WGIAB, WGSAM, WGBIFS, and WKBALTPEL, with main focus on the biological processes and interactions of key species in the Baltic Sea;

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting. Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

WGBFAS will report by 8 May 2023 for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WGBIE- Working Group for the Bay of Biscay and Iberian waters Ecoregion**

2022/2/FRSG08            The **Working Group for the Bay of Biscay and Iberian waters Ecoregion** (WGBIE), chaired by Ching Villanueva, France and Santiago Cerviño, Spain, will meet at ICES Headquarters in Copenhagen, Denmark, 03–11 May 2023 to:

- a) Address generic ToRs for Regional and Species Working Groups;
- b) Review results and recommendations from benchmark and other interim relevant workshops held in 2022 and early 2023
- c) Update on Stock ID studies

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

WGBIE will report by May 19 2023 for the attention of the Advisory Committee.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WGCSE – Working Group for the Celtic Seas Ecoregion**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG09            The Working Group for the Celtic Seas Ecoregion (WGCSE), chaired by Jonathan White, Ireland will meet 3 to 12 May 2023 in Ostend, Belgium and in September 2023 (date and venue tbc) to:

- a) Address generic ToRs for Regional and Species Working Groups;

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2022 ICES data call.

WGCSE will report by 26 May 2023 for the attention of ACOM, and by 2 October 2023 for *Nephrops* stocks, anglerfish and megrim in Rockall.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WGDEEP – Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG10 Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP), chaired by Elvar Hallfredsson, Norway and Juan Gil Herrera\*, Spain, will meet in Lisbon, Portugal, 3–9 May 2023 to:

- a) Address generic ToRs for Regional and Species Working Groups.
- b) Complete the development of Stock Annexes for all the stocks assessed by WGDEEP, based on the most recent agreed assessment.
- c) Update the description of deep-water fisheries in both the NEAFC Regulatory Area and ICES area(s) by compiling data on catch/landings, fishing effort (inside versus outside the EEZs, in spawning areas, areas of local depletion, etc.), and discard statistics at the finest spatial resolution possible by ICES Subarea and Division and NEAFC Regulatory Area. In particular, describe and prepare a first advice draft of any new emerging deep-water fishery with the available data in the NEAFC Regulatory Area.
- d) Continue work on exploratory assessments for deep-water species.
- e) Evaluate the status of stocks for the provision of advice in 2023.

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

WGDEEP will report by 26 May 2023 for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WGDIAD – Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species**

*This resolution was approved in in October 2020*

2020/2/FRSG11 The **Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species** (WGDIAD), chaired by Dennis Ensing, UK (2021-2023), and Hugo Maxwell, Ireland (2022-2024) will meet by correspondence and annually at

the ICES ASCs in September 2021, 2022 and 2023 to work on ToRs and generate deliverables as listed in the Table below.

WGDIAD will report on the activities of each year to FRSG by 31 December of that year.

### Terms of Reference

- a) Collate and publish an inventory of working groups and international research programmes in the study of diadromous fish, as a framework to promote exchanging resources, approaches, and best practices;
- b) Provide a mechanism through which issues relating to diadromous fish species and their environment, including also aspects connected to estuarine and fresh water habitats used by these species, can be addressed and coordinated within the ICES science plan;
- c) Identify scientific needs and propose activities, including expert groups, theme sessions and symposia, to support the implementation of the Science Plan and the work of SCICOM and ACOM Experts Groups on diadromous species and review their outputs and list recommendations and/or conclusions;
- d) Assist FRSG and ICES to integrate important activities with those of other Expert Groups reporting to FRSG, other SGs and/or ACOM.

### ToR descriptors

| ToR | DESCRIPTION   | BACKGROUND  | <a href="#">SCIENCE PLAN<br/>CODES</a> | DURATION        | EXPECTED<br>DELIVERABLES   |
|-----|---|---|--|-----------------|--|
| a   | Collate and publish an inventory of working groups and international research programmes in the study of diadromous fish, as a framework to promote exchanging resources, approaches, and best practices. | There is a need to coordinate and draw the various elements of ICES work together to support the management advice provided for multiple species of diadromous fish, particularly in delivering commitments under various regulations, including the EU-Habitats and Water Framework Directives, Data Collection Multi Annual Programme, and the EU Eel Regulation, but also in exchange of ideas, discussing different approaches, and promoting best practices. | 1.4, 6.2, 5.2                          | Year 1, 2 and 3 | Report of the WG and maintenance of a previously established network of diadromous fish experts. |

|   |   |   |               |                 |  |
|---|---|---|---------------|-----------------|--|
| b | Provide a mechanism through which issues relating to diadromous fish species and their environment, including also aspects connected to estuarine and fresh water habitats used by these species, can be addressed and coordinated within the ICES science plan.                                      | WGDIAD brings together experts in the field of diadromous fish ecology, management, and conservation. Through the mechanism at the group's disposal the particular issues of diadromous fish management are addressed and coordinated in accordance with the ICES Science Plan.                             | 6.2, 1.7, 1.9 | Year 1, 2 and 3 | Organise theme sessions, symposia or EGs. Liaise with experts of other EGs, and relevant sources outside ICES on issues relevant to diadromous fish, and report back on these activities in the annual report. |
| c | Identify scientific needs and propose activities, including experts groups, theme sessions and symposia, to support the implementation of the Science Plan and the work of SCICOM and ACOM Experts Groups on diadromous species and review their outputs and list recommendations and/or conclusions. | ICES is well placed to coordinate scientific activities which generate up to date information on the biology and ecology of diadromous species, threats to their status, including climate change, and advice on measures to be taken to restore habitats and ecosystems, and rebuild depleted populations. | 3.2, 6.1, 5.2 | Year 1, 2 and 3 | Organise theme sessions, symposia or expert groups. Co-ordinate feedback from these sources for use in publications and CRR documents. Liaise with and support chairs of EGs and WKS to achieve their aims.    |
| d | Assist FRSG and ICES to integrate important activities with those of other Expert Groups reporting to EPDSG, other and/or ACOM.   | Issues relating to, for example, rare and data limited species are widely dispersed across the ICES Science plan. This group provides a focal point for both internal and external communication and reporting of new developments and concerns regarding SGs diadromous fish.                              | 5.2, 5.1      | Year 1, 2 and 3 | Keep ICES abreast of important issues relating to Diadromous fish species and ensure these issues are communicated within the ICES community to relevant EGs and SGs.  |

### Summary of the Work Plan

|        |  |
|--------|--|
| Year 1 | Coordinate scientific activities (theme sessions, symposia, EGs, CRRs and reports to FRSG) |
| Year 2 | Coordinate scientific activities (theme sessions, symposia, EGs, CRRs and reports to FRSG) |
| Year 3 | Coordinate scientific activities (theme sessions, symposia, EGs, CRRs and reports to FRSG) |

## Supporting information

|  |  |
|--|--|
| Priority                               | The Working Group will provide the mechanism to coordinate scientific activities relating to diadromous fish species and their environment in support of the ICES Science Plan. It will also permit ICES to respond fully to requests from NASCO and the EU/FAO/IUCN/CITES for scientific advice on management strategies, research needs and data deficiencies. |
| Resource requirements                  | Meeting facilities at the ASC in 2021-2023, including teleconferencing facilities  |
| Participants                           | National representatives and other invited experts working with diadromous species   |
| Secretariat facilities                 | Secretarial support for organisation of the meeting and preparation of the report.   |
| Financial                              | No financial implications.   |
| Linkages to ACOM and groups under ACOM | The proposal originates from FRSG but will have direct significance to ACOM for advice from WGNAS, WGBAST, and WGEEL in particular.  |
| Linkages to other committees or groups | Besides FRSG, there are linkages to the SCICOM Steering Groups Ecosystem Observation, Human Activities, Pressures, and Impacts, and Ecosystem Processes and Dynamics and all Expert Groups working on issues of relevance for diadromous species in relation to improving scientific understanding and coordinating scientific activities.                       |
| Linkages to other organizations        | NASCO, FAO, EIFAAC and GFCM, HELCOM, CITES, NPAFC.   |

### WGEEL – Joint EIFAAC/ICES/GFCM Working Group on Eels

*Approved in Resolutions meeting on 9 November 2022. Will go to GFCM for approval/addition as well.*

2022/2/FRSG12      The **Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL)**, chaired by Jan-Dag Pohlmann, Thünen Institute, Germany and Caroline Durif,\* Norway will meet, in a split meeting from 11–16 September (virtually) and 25 September–02 October in **TBD** to:

- a) Address the generic EG ToRs from ICES, and any requests from EIFAAC or GFCM;
- b) Report on developments in the state of the European eel (*Anguilla anguilla*) stock, the fisheries on it and other anthropogenic impacts;
- c) Report on updates to the scientific basis of the advice, including any new or emerging threats or opportunities;
- d) Identify and address Mediterranean-specific issues on European eel
- e) Implement the roadmap proposed by WKFEA
- f) Review and update the stock annex

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

WGEEL will report by Date, 16 October 2023 for the attention of ACOM, WGDIAD, FRSG and FAO, EIFAAC and GFCM.

## Supporting Information

|  |  |
|--|--|
| Priority                               | <ol style="list-style-type: none"> <li>1. The status of the European eel stock remains outside safe biological limits and continuing and further management actions are required to recover the stock.</li> <li>2. The present stock status assessment is based on recruitment time series, which have no predictive power and therefore cannot be used to identify the most effective way to recover the stock nor the time scale over which recovery might be achieved. Therefore, the development and application of further status assessment methods are urgently required. Therefore the findings of WKFEA require particular attention.</li> <li>3. The Council Regulation (EC) 1100/2007 obliges EU Member States to report national stock indicators, to take management measures and to report progress. Non-EU countries have no such legal obligation, but the same aspirations are necessary to provide a whole-stock assessment and management. The Working Group continues to provide EIFAAC, ICES and the GFCM countries with support in implementing and improving such actions.</li> <li>4. The EU has requested annually recurring scientific advice on the European eel. Specifically, for eel, the advice is sought in support of the Eel Regulation (EC 1100/2007).</li> </ol> |
| Scientific justification               | <p>European eel life history is complex and atypical among aquatic species. The stock is genetically panmictic and data indicate random arrival of adults in the spawning area. The continental eel stock is widely distributed and there are strong local and regional differences in population dynamics and local stock structures. Fisheries on all continental life stages take place throughout the distribution area. Local impacts by fisheries vary from almost nil to heavy overexploitation.</p> <p>Other forms of anthropogenic mortality (e.g. hydropower, pumping stations) also impact on eel and vary in distribution and local relevance.</p> <p>Most but not all EU Member States reported quantitative estimates of the required stock indicators to the EU in 2012, 2015, 2018 and 2021. The reliability and accuracy of these data have not yet been fully evaluated, but the ICES WKEMP will examine this. Furthermore, the stock indicators of some non-European countries within the natural range are lacking.</p>  |
| Resource requirements                  | SharePoint, WebEx  |
| Participants                           | EIFAAC, ICES and GFCM Working Group Participants, Invited Country Administrations, Client representative   |
| Secretariat facilities                 | Support to organize the logistics of the meeting.  |
| Financial                              | At countries expense   |
| Linkages to advisory committees        | ACOM   |
| Linkages to other committees or groups | WGDIAD, SCICOM, FRSG   |
| Linkages to other organizations        | FAO EIFAAC, GFCM, EU DG-MARE, EU DG-ENV  |

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## WGEF – Working Group on Elasmobranch Fishes

*Approved in Resolutions meeting on 9 November 2022*



2022/2/FRSG12      The **Working Group Elasmobranch Fishes** (WGEF), chaired by Sophy McCully Phillips\* (UK) and Jurgen Batsleer (Netherlands), will meet:

online 7–8 June 2023 to:

a) Compile the catch and length data for all elasmobranch stocks;

and in Lisbon, Portugal, from 20–29 June 2023 to:

- a) Address generic ToRs for Regional and Species Working Groups.
- b) Update the description of elasmobranch fisheries for deep-water, pelagic and demersal species in the ICES area and compile landings, effort and discard statistics by ICES Subarea and Division, and catch data by NEAFC Regulatory Area. Describe and prepare a first Advice draft of any emerging elasmobranch fishery with the available data on catch/landings, fishing effort and discard statistics at the finest spatial resolution possible in the NEAFC RA and ICES area(s);
- c) Evaluate the stock status for the provision of biennial advice due in 2023 for: (i) skate stocks in the North Sea ecoregion, the Azores and MAR; (ii) catsharks (*Scyliorhinidae*) in the Greater North Sea, Celtic Seas and Bay of Biscay and Iberian Coast ecoregions; (iii) smooth-hounds in the Northeast Atlantic; and (iv) tope in the Northeast Atlantic)
- d) Evaluate the stock status for the provision of quadrennial advice due in 2023 for the following: (i) common skate complex (blue skate (*Dipturus batis*) and flapper skate (*Dipturus intermedius*) in the Greater North Sea, and (ii) starry ray (*Amblyraja radiata*) in the Norwegian Sea and Greater North Sea, Skagerrak and Kattegat, as well as the following widely-distributed shark stocks: (i) Portuguese dogfish; (ii) Leafscale gulper shark; (iii) Kitefin shark; (iv) and the following species that are on the prohibited species list: (v) angel shark, (vi) basking shark and (vii) white skate;
- e) Collate landings and discard data from countries and fleets according to the ICES data call to follow recommendations from WKSHARK5 to: (i) address the following issues: data quality and onboard coverage; raising factors; discard retention patterns between fleets and countries; discard survival; as well as following the outcomes of WSKATE and to make the best use of survey indices in the assessments where appropriate.
- f) Work intersessionally to draft/update stock annexes and then develop a procedure and schedule for subsequent reviews.

The assessments will be carried out on the basis of the stock annex in National Laboratories, prior to the meeting. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting as specified in the 2023 ICES data call must be available to the group no later than 14 days prior to the starting date.

WGEF will report by 11 August 2023 for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WGHANSA – Working Group on Southern Horse Mackerel Anchovy and Sardine**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG13      The Working Group on Southern Horse Mackerel Anchovy and Sardine (WGHANSA), chaired by Leire Ibaibarriaga, Spain, will meet by correspondence 29

May to 2 June 2023 (WGHANSA1) and in Spain 20 to 24 November 2023 (WGHANSA2) for (WGHANSA2) to:

- a) Address generic ToRs for Regional and Species Working Groups for relevant stocks (hom.27.9a and ane.27.9a in WGHANSA1 and pil.27.7, pil.27.8abd, pil.27.8c9a and ane.27.8 in WGHANSA2);

The assessments will be carried out on the basis of the Stock Annexes. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

WGHANSA1 will report by 16 June 2023 and WGHANSA2 will report by (date tbd) December 2023 for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WGHARP – Joint ICES/NAFO/NAMMCO Working Group on Harp and Hooded Seals**

*Approve on the ACOM-SCICOM Forum in February 2023*

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

2022/2/FRSG14      The **ICES/NAFO/NAMMCO Working Group on Harp and Hooded Seals (WGHARP)** chaired by Martin Biuw, Norway, and Sophie Smout, UK, will meet at Tromsø, Norway, on 4-8 September 2023 to:

- a) Review new pup production estimates based on the 2022 surveys of NW Atlantic and Greenland Sea harp seals and Greenland Sea hooded seals;
- b) Review results from the biological samples obtained from the NW Atlantic, Greenland Sea and Barents Sea / White Sea stocks;
- c) Review the status of populations using the method agreed at the WKBSEALS2023 benchmark as described in the stock annex and produce a report of the work carried out, providing summaries of the following where relevant: i) Input data and examination of data quality; ii) estimates of population size, pup production, and harvest potential; iii) The state of the population against relevant reference points;
- d) Review the main result from WGIBAR and WGIEAGS;
- e) Comment on relevant sections of the published [ecosystem](#) and [fisheries](#) overviews for the Greenland Sea and the Barents Sea.

WGHARP will report by 2 October 2023 for the attention of the ACOM.

### **Supporting Information**

---

**Priority:** High priority as a tool for the assessment and management of harp and hooded seals in the North Atlantic Ocean. WGHARP works on requests for advice from member countries through ACOM, and/or NAMMCO Council.

---

|  |   |
|--|---|
| <b>Scientific justification:</b>               | A number of North Atlantic nations currently harvest harp and hooded seals and there is a need for a relatively neutral forum to develop the basis for scientific advice on sustainable harvests of these species, including recognition of the need for a precautionary approach to management of seal populations. The WGHARP provides this forum using quantitative techniques necessary for development of sound catch advice and including ICES, NAFO and NAMMCO member state scientific experts in pinniped biology; members represent all harvesting nations as well as nations without seal harvests. |
| <b>Resource requirements:</b>                  | None beyond the contributions from member states  |
| <b>Participants:</b>                           | The Group is normally attended by some 10-15 members.   |
| <b>Secretariat facilities</b>                  | SharePoint site   |
| <b>Financial:</b>                              | None  |
| <b>Linkages to advisory committees:</b>        | to WGHARP reports to ACOM, NAFO Scientific Council and NAMMCO Scientific Committee.   |
| <b>Linkages to other committees or groups:</b> | FRSG, WGMME, WGIEAGS, WGIBAR, WGBYC, WKBSEALS2023   |
| <b>Linkages to other organizations:</b>        | NOAA/NMFS. The work of this group is closely aligned with harp and hooded seal research and management programs conducted by the governments of Canada, Greenland, Norway, and the United States.   |

## **WGMIXFISH-ADVICE - Working Group on Mixed Fisheries Advice**

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

2022/2/FRSG15 The **Working Group on Mixed Fisheries Advice (WGMIXFISH-ADVICE)**, chaired by Marc Taylor (Germany) and Harriet Cole (UK), will hold a hybrid meeting in Copenhagen, on 2-6 October 2023 to:

- a) Carry out mixed fisheries projections for the Bay of Biscay taking into account the single species advice and the management measures in place for 2023 for anglerfish, megrim, sea bass, hake, sole, Norway lobster, whiting and pollack that is produced by WGBIE in May 2023; for mackerel, horse mackerel, and blue whiting produced by WGWIDE in September 2023 and smooth hound produced by WGEF in October 2023.
- b) Carry out mixed demersal fisheries projections for the Celtic Sea taking into account the single species advice and the management measures in place for

2023 for cod, haddock, whiting, hake, megrim, monkfish, sole and Norway lobster that is produced by WGCSE and WGBIE in 2023.

- c) Carry out mixed fisheries projections for Iberian waters taking into account the single species advice and the management measures in place for 2023 for hake, four-spot megrim, megrim and anglerfish that is produced by WGBIE in May 2023.
- d) Carry out mixed demersal fisheries projections for the Irish Sea (27.7.a) taking into account the single species advice for cod, haddock, whiting, plaice, sole, and Norway lobster that is produced by WGCSE in 2023.
- e) Carry out mixed demersal fisheries projections for the North Sea taking into account the single species advice and the management measures in place for 2023 for cod, haddock, whiting, saithe, plaice, sole, turbot, Norway lobster, and witch that is produced by WGNSSK in May 2023;
- f) Produce draft mixed-fisheries sections for the ICES advisory report 2023 that includes a dissemination of the fleet and fisheries data and forecasts for the North Sea, Celtic Sea, Irish Sea, Bay of Biscay, and Iberian waters.

WGMIXFISH-Advice will report by 28 October 2023 for the attention of ACOM.

## **WGMIXFISH-METHODS – Working Group on Mixed Fisheries Advice Methodology**

*This resolution approved in February 2023*

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group.*

2022/2/FRSG16      The Working Group on Mixed Fisheries Advice Methodology (WGMIXFISH-METHODS), chaired by Marc Taylor, Germany, and Harriet Cole, UK, will hold a hybrid meeting in San Sebastián, Spain, on 19–23 June 2023, to:

- a. Continue the improvement of WGMIXFISH-ADVICE data call, data processing, workflow, auditing, updating associated documentation and increasing transparency;
- b. Respond to the outcomes of the Mixed Fisheries Scoping Meeting;
- c. Exploration of developments in methodology and advice;
- d. Respond to the outcomes and issues encountered during WGMIXFISH-Advice;
- e. Develop mixed fisheries models for sea regions not currently covered in the mixed fisheries advice;

WGMIXFISH-METHODS will report by 29 July 2023 for the attention of ACOM.

### **Supporting Information**

---

|                  |   |
|------------------|---|
| <b>Priority:</b> | The work is essential to ICES to progress in the development of its capacity to provide advice on multispecies fisheries. Such advice |
|------------------|---|

---

|  |  |
|--|--|
|  | is necessary to fulfil the requirements stipulated in the MoUs between ICES and its client commissions.  |
| <b>Scientific justification and relation to action plan:</b> | The issue of providing advice for mixed fisheries remains an important one for ICES. Following the Aframe project (2007-2009), SGMIXMAN (2008) and AGMIXNS (2009) where methods were developed and applied, WGMIXFISH has continued this work, combining outputs of single-stock-assessments and métier-effort data to provide forecast of effort and multi-species catch at fleet level based on annual single stock catch advice. WGMIXFISH –METHODS will meet to continue this development, ensuring outputs are informative and fit for purpose. |
| <b>Resource requirements:</b>                                | No specific resource requirements, beyond the need for members to prepare for and participate in the meeting.  |
| <b>Participants:</b>   | Experts with qualifications regarding mixed fisheries aspects, fisheries management and modelling based on limited and uncertain data.   |
| <b>Secretariat facilities:</b>                               | Meeting facilities, production of report.  |
| <b>Financial:</b>  | None   |
| <b>Linkages to advisory committee:</b>                       | ACOM   |
| <b>Linkages to other committees or groups:</b>               | SCICOM through the WGMG. Strong link to STECF.   |
| <b>Linkages to other organizations:</b>                      | This work serves as a mechanism in fulfilment of the MoU with EC and fisheries commissions. It is also linked with STECF work on mixed fisheries.  |

## WGNAM – Working Group on Northwest Atlantic Mackerel Ecology and Assessment

*This resolution was approved on the Resolution Forum in October 2022*

2021/2/FRSGxx A **Working Group on Northwest Atlantic Mackerel Ecology and Assessment (WGNAM)**, co-chaired by Kiersten Curti, USA and Elisabeth Van Beveren, Canada, will work on ToRs and generate deliverables as listed in the Table below.

|           | MEETING DATES | VENUE  | REPORTING DETAILS                        | COMMENTS (CHANGE IN CHAIR, ETC.) |
|-----------|---------------|--------|--|----------------------------------|
| Year 2022 | 24-27 October | online | Interim report by 15 November FRSG       |                                  |
| Year 2023 |               |        | Interim report by Date Month May to FRSG |                                  |
| Year 2024 |               |        | Final report by Date Month May to FRSG   |                                  |

## ToR descriptors<sup>1</sup>

| ToR | Description   | Background   | <a href="#">Science Plan Codes</a> | Duration | Expected Deliverables |
|-----|---|--|------------------------------------|----------|-----------------------|
| a   | Evaluate population structure of Atlantic mackerel and consider the impact of spatial structure definitions on the dynamics in the region.  | Atlantic mackerel in the Northwest Atlantic have long been divided into a northern and southern contingents – of population areas and migratory patterns. The biological relationship between these two contingents is unclear. Population structure in small scombrids (including Northeastern Atlantic Atlantic mackerel) will be reviewed and a comparison of recent methods and results (genomics and otolith stable isotopes) will be made. Presentations and discussions should provide a platform to develop and optimize research projects aimed at differentiating fish from each contingent, and how this capacity should best be used to improve the stock assessments of Atlantic mackerel in the US and Canada. | 1.8, 6.6                           | 3 years  | Review paper          |
| b   | Compare and contrast data collection programs, current research and modeling used for Atlantic Mackerel in the Northwest Atlantic and identify data needs and research topics that could improve assessments. | The Atlantic Mackerel stock is assessed separately by both the U.S. and Canada. In recent years, there has been increased collaboration in developing assessments. Science supporting the two assessments will be compared including data and models. Data and model assumptions reviewed should include but not be restricted to fishery independent and dependent surveys, acoustics, reproductive, aging, growth, natural mortality, availability and habitat. From this comparison, data needs and research questions will be identified to improve assessments in the future.   | 5.2                                | 3 years  | Review paper          |

<sup>1</sup> Avoid generic terms such as “Discuss” or “Consider”. Aim at drafting specific and clear ToR, the delivery of which can be assessed

|   |  |  |     |         |              |
|---|--|--|-----|---------|--------------|
| c | Develop and evaluate hypotheses for decline in recruitment of Atlantic mackerel and identify research approaches to evaluate these hypotheses. | The biomass of the Northwest Atlantic Mackerel stock is low. One of the contributing factors is decreased recruitment. Hypotheses have been developed for the northern contingent, but these hypotheses have not been evaluated for the southern contingent. Further, the role of physical changes in the system, changes in movement patterns, changes in age-structure, and changes in reproductive dynamics have not been evaluated. This effort will take a holistic approach and consider evidence for a variety of recruitment hypotheses and then identify research approaches to evaluate the most promising ones. | 5.1 | 3 years | Review paper |
|---|--|--|-----|---------|--------------|

### Summary of the Work Plan

|               |   |
|---------------|---|
| <b>YEAR 1</b> | <b>The WG will meet and address each ToR.</b>   |
| Year 2        | The WG will review drafts of papers developed following the year 1 meeting.                               |
| Year 3        | The WG will complete the review papers and submit for publication. A final report will also be completed. |

### Supporting information

|  |   |
|--|---|
| Priority                               | The current activities of this Group will lead ICES into issues related to the ecosystem effects of fisheries, especially with regard to the application of the Precautionary Approach. Consequently, these activities are considered to have a very high priority. |
| Resource requirements                  | The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.                     |
| Participants                           | The Group will be attended by some 5-10 members and guests  |
| Secretariat facilities                 | None.   |
| Financial                              | No financial implications.  |
| Linkages to ACOM and groups under ACOM | There are no obvious direct linkages but developing the expertise could link to ACOM in the future.   |
| Linkages to other committees or groups | Interactions will be sought with WGMEGS and WGWIDE.   |
| Linkages to other organizations        | There are linkages to a number of organizations and institutions throughout North America   |

## **WGNAS – Working Group on North Atlantic Salmon**

*Approved on the Resolutions Forum on 10 March 2023*

2022/2/FRSG17 The **Working Group on North Atlantic Salmon (WGNAS)**, will meet in two parts:

- WGNAS will meet to address ToR 2.4 from 14-15 February 2023 via online web conference, chaired by Cindy Breau (CA).
- all other ToRs will be addressed 27 March–6 April 2023 at the Black Diamond and in ICES HQ in Copenhagen, Denmark, during hybrid meetings chaired by Alan Walker (UK)<sup>2</sup> and Martha Robertson (CA).<sup>3</sup>

### **1 With respect to Atlantic salmon in the North Atlantic area:**

- 1.1 provide an overview of salmon catches and landings by country, including unreported catches and catch and release, and production of farmed and ranched Atlantic salmon in 2021 and 2022<sup>4</sup>;
- 1.2 report on significant new or emerging threats to, or opportunities for, salmon conservation and management<sup>5</sup>;
- 1.3 provide information on causes of variability in return rates between rivers within regions in the North Atlantic;
- 1.4 provide a summary of the most recent findings of ongoing research projects investigating the marine phase of Atlantic salmon (e.g. SeaSalar, SeaMonitor, SAMARCH, satellite tagging at Greenland);
- 1.5 provide a summary of the current state of knowledge on freshwater and marine predation by cormorants and impact on stocks;
- 1.6 provide a compilation of tag releases by country in 2021 and 2022; and,
- 1.7 identify relevant data deficiencies, monitoring needs and research requirements

### **2 With respect to Atlantic salmon in the North-East Atlantic Commission area:**

- 2.1 describe the key events of the 2021 and 2022 fisheries<sup>6</sup>;

---

<sup>2</sup> Alan Walker (UK) will serve a three-year term as WGNAS Chair, from 2023 – 2025.

<sup>3</sup> Martha Roberston (CA) will serve as a temporary WGNAS Chair through the 2023 annual meeting of WGNAS.

<sup>4</sup> With regard to ToR 1.1, for the estimates of unreported catch the information provided should, where possible, indicate the location of the unreported catch in the following categories: in-river; estuarine; and coastal. Numbers of salmon caught and released in recreational fisheries should be provided.

<sup>5</sup> With regard to ToR 1.2, ICES is requested to include reports on any significant advances in understanding of the biology of Atlantic salmon that is pertinent to NASCO.

<sup>6</sup> In the responses to ToRs 2.1, 3.1 and 4.1, ICES is asked to provide details of catch, gear, effort, composition and origin of the catch and rates of exploitation. For homewater fisheries, the information provided should indicate the location of the catch in the following categories: in-river; estuarine; and coastal. Information on any other sources of fishing mortality for salmon



- 2.2 review and report on the development of age-specific stock conservation limits, including updating the time-series of the number of river stocks with established CLs by jurisdiction;
- 2.3 describe the status of the stocks, including updating the time-series of trends in the number of river stocks meeting CLs by jurisdiction;
- 2.4 advise on the risks of salmon bycatch occurring in pelagic and coastal fisheries, and report on effectiveness and adequacy of current bycatch monitoring programs; and,

**In the event that NASCO informs ICES (response requested by 31 January) that the Framework of Indicators (FWI) indicates that reassessment is required:**

- 2.5 provide catch options or alternative management advice for the 2023/2024 - 2025/2026 fishing seasons, with an assessment of risks relative to the objective of exceeding stock conservation limits, or pre-defined NASCO Management Objectives, and advise on the implications of these options for stock rebuilding<sup>7</sup> and;
- 2.6 update the Framework of Indicators used to identify any significant change in the previously provided multi-annual management advice.

**3 With respect to Atlantic salmon in the North American Commission area:**

- 3.1 describe the key events of the 2021 and 2022 fisheries (including the fishery at St Pierre and Miquelon)<sup>6</sup>;
- 3.2 update age-specific stock conservation limits based on new information as available, including updating the time-series of the number of river stocks with established CLs by jurisdiction; and,
- 3.3 describe the status of the stocks, including updating the time-series of trends in the number of river stocks meeting CLs by jurisdiction.

**4 With respect to Atlantic salmon in the West Greenland Commission area:**

- 4.1 describe the key events of the 2021 and 2022 fisheries<sup>6</sup>; and,
- 4.2 describe the status of the stocks<sup>8</sup>.

---

*is also requested. For ToR 4.1, if any new surveys are conducted and reported to ICES, ICES should review the results and advise on the appropriateness of incorporating resulting estimates into the assessment process.*

*<sup>7</sup> In response to ToR 2.5 provide a detailed explanation and critical examination of any changes to the models used to provide catch advice and report on any developments in relation to incorporating environmental variables in these models. Also provide a detailed explanation and critical examination of any concerns with salmon data collected in 2022 which may affect the catch advice considering the restrictions on data collection programmes and fisheries due to the COVID 19 pandemic.*

*<sup>8</sup> In response to ToR 4.2, ICES is requested to provide a brief summary of the status of North American and North-East Atlantic salmon stocks. The detailed information on the status of these stocks should be provided in response to ToRs 2.3 and 3.3.*

**5 Address relevant points in the Generic ToRs for Regional and Species Working Groups for each salmon stock complex.**

Material and data relevant for the meeting must be available to the group on the dates specified in the 2022 ICES data call.

WGNAS will report by 10 April 2022 for the attention of ACOM.

**WGNSSK – Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG18      The **Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak** (WGNSSK), chaired by Lies Vansteenbrugge\*, Belgium, and Alessandro Orio\*, Sweden, will meet in Den Helder, The Netherlands, 18-27 April 2023 and by correspondence in September 2023 to:

- a) Address generic ToRs for Regional and Species Working Groups.
- b) Assess Norway pout assessments by correspondence.
- c) Report on reopened advice as appropriate;

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2023 ICES data call.

WGNSSK will report by 12 May 2023, and by 30 September 2023 (Norway pout) for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

**WGTAFGOV – Working Group on Transparent Assessment Framework Governance**

2022/2/FRSG19

**WGTRUTTA – Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous *Salmo trutta*) Populations**

*This resolution was approved on the Resolution Forum in June 2020*

2019/2/FRSG20      The **Working Group to develop and test assessment methods for Sea trout populations (anadromous *Salmo trutta*)** (WGTRUTTA), chaired by Johan Höjesjö, Sweden, and Alan Walker, UK, will work on ToRs and generate deliverables as listed in the Table below.

The WG's 4-year term will run from June 2020 to May 2023.

|           | MEETING DATES    | VENUE                   | REPORTING DETAILS            | COMMENTS (CHANGE IN CHAIR, ETC.)  |
|-----------|------------------|-------------------------|------------------------------|---|
| Year 2020 | 15–18 June       | online meeting          |                              | Start-up meeting, learning lessons from WG1, preparing detailed workplan with roles & responsibilities, milestones & deliverables |
| Year 2021 | 19-21 January    | Online meeting          |                              | Mid-year progress review and workshop   |
|           | 29 June – 1 July | Online meeting          | Interim E-eval by 1 October  | Review progress in year 1 and plans for years 2 & 3   |
| Year 2022 | DATE February    | Dublin/Newport, Ireland |                              | Mid-year progress review and workshop   |
|           | DATE July        | online meeting          |                              | Review progress in Year 2 and plans for year 3  |
|           | 21–25 November   | Rennes, France          | Interim E-eval by 9 December | Mid-year progress review and workshop   |
| Year 2023 | DATE May         | online meeting          |                              | Draft the Final Report and consider a further term  |
|           | DATE October     | Lisbon, Portugal        | Final report by 1 October    | Submit the Final Report   |

### ToR descriptors

| ToR | DESCRIPTION  | BACKGROUND  | SCIENCE PLAN CODES | DURATION | EXPECTED DELIVERABLES  |
|-----|--|---|--------------------|----------|--|
| A   | Describe the life history drivers and distribution of sympatric sea and freshwater trout populations | The trout life cycle is highly variable over space and time, which renders assessment and management challenging. Our understanding of ecological patterns in trout phenology, life history and distribution across large scale environmental gradients is far from complete but is a prerequisite to improving sea trout management. | 5.2                | 3 years  | <p>A1. Fully establish the sea trout database, its population with data from all involved countries, and its preparation for inclusion as one of the official ICES databases.</p> <p>A2. Define a sub-set of variables for trout life history and habitat characteristics accounting for the between-stocks variances, for identifying key index rivers and for targeting stock-</p> |

|   |  |  |                        |   |
|---|--|--|------------------------|---|
|   |  |  |                        | recruitment and state models.   |
|   |  |  |                        | A3. Investigate trout distribution within rivers as a function of abiotic and biotic habitat characteristics.   |
|   |  |  |                        | A4. Quantify the importance of anadromy for trout populations.  |
| B | Quantify the external pressures on trout populations in formats necessary to understand the state of local populations   | Knowledge of the ecology of trout is limiting our ability to understand the consequences for trout populations of the rapidly increasing natural, anthropogenic, additive and cumulative impacts on aquatic environments.  | 2.1, 2.5, 5.6 3 years  | B1. Describe the current and potential future impacts of natural and anthropogenic impacts on trout populations.<br>B2. Make recommendations for unified and standardized protocols for sampling trout, characterizing habitats and calibrating for extrapolations across the natural range.<br>B3. Describe situations outside the Baltic where sea trout stocks may be exploited or otherwise impacted at an international scale. |
| C | Develop a toolbox of methods to assess stock and population state, based on a suite of options, and suitable for a range of scenarios found across the natural range of the sea trout. | The WG (2017-2019) developed approaches for assessing the state of trout populations, including (i) stock-recruitment models using metrics from various life stages by applying several curve fitting approaches to 'data rich' stocks with data from counts, returning stock estimates, catches, and juvenile abundance surveys, and (ii) length-based indicators using index | 3.2, 3.3, 6.1. 3 years | C1. Examine the S/R models from WG (2017-2019) in terms of transfer functions, types and amounts of data required for setting BRPs, additional data and better and standardized reporting of catches.<br>C2. Examination of the opportunities to develop regional versions of the Trout Habitat Score (THS)   |

|  |  |                              |   |
|--|--|------------------------------|---|
|  | <p>catchments, to demonstrate state and identify where pressures may have had an impact; (iii) extended the application of the Trout Habitat Scores (THS); and collaborated on development of a theoretical Bayesian Population Dynamics Model for Baltic sea trout. These all require further development and testing with novel data and situations in order to advance them to a toolbox for managers and other stakeholders.</p>   |                              | <p>process across the native range of sea trout.</p> <p>C3. Develop the Bayesian model of sea trout</p> <p>C4. Develop and propose a data collection framework to support LBI type analysis of pressures on stocks, liaising with EU Regional Coordination Groups.</p> <p>C5. Define the methods for the forecast of catches that would be consistent with the ICES application of the precautionary approach and, in case it is desired, MSY,</p>  |
| <p>D Develop solutions to achieve sustainable governance of trout stocks</p> | <p>Sustainable use and management of the anadromous sea trout is challenging for many reasons including because the fish use multiple environments and are subject to a variety of impacts and stressors, migrating across different ecological and legislative borders. In many European countries, sea trout fishers are not registered or licenced, and knowledge of effort and catch is insufficient or lacking. Knowledge of non-fishery impacts is even more data-poor.</p> <p>To effectively conserve the varied and multiple contributions from sea trout to society, social scientific knowledge must complement ecology. Economic valuation studies can clarify how the public, including participants and non-participants of sea trout fishing, benefit from and value sea trout. This may</p> | <p>7.1, 7.4, 7.7 3 years</p> | <p>D1. Describe the key ecological, social and economic management objectives for sea trout fisheries across the natural range, to identify the target audience requirements.</p> <p>D2. Define conservation reference points to ensure stock sustainability consistent with the precautionary approach.</p> <p>D3. Establish what level of socio-economic risk (uncertainty) is acceptable to fisheries managers in setting management reference points.</p> <p>D4. Explore and evaluate management strategies conducive to meeting socio-economic goals</p> |

---

vary spatially between fisheries (e.g. between countries) and, moreover, is likely affected by different regulation regimes between regions. Comparative studies of governance across countries and levels can identify “best practice” and learning across jurisdictions.

---

while ensuring the biological sustainability of the stocks.

### Summary of the Work Plan

Over the 3-year period, there will be 8 meetings, though some will be face-to-face whereas others will be by webex – the WG will only meet by webex in 2020, and will use webex as much as possible to minimise travel.

Meetings will address: a start-up meeting to agree the work plan with roles and responsibilities; annual review and planning meetings at the end of years 1 and 2; interim workshops in years 1, 2 and 3 focussing on specific tasks; a meeting to specifically draft the final report and a final meeting to submit the Final Report.

Subgroups will work on the ToRs between these meetings with regular contact through email and/or webinars. Most of the work regarding deliverables for the different ToRs will be planned and performed in parallel.

All four ToR will be launched at the onset of the working group and be delivered in parallel throughout the three-year term. However, given that ToR D requires expertise on socio-economics that is not within the existing membership but is available through other ICES working groups, we propose to carry out this ToR as a separate workshop under its own resolution in 2021/22.

### Supporting information

---

|                        |  |
|------------------------|--|
| Priority               | The inclusion of sea trout and other diadromous fish in EU policy areas including the CFP and Marine Strategy Framework Directive means that it is important to improve the methods currently available to managers to assess the status of stocks and investigate the effects of management actions. The final report and recommendations will guide both individual countries in making progress on sea trout assessment and management and will steer ICES on the best next steps for sea trout science, assessment and advice.   |
| Resource requirements  | The research programmes which provide the main inputs to this group are already underway, and resources are already committed. The additional resource from ICES required to undertake additional activities in the framework of this group is only Secretarial support (see below).<br><br>A proposal has been submitted for an International Training Network (ITN) of PhDs on subjects contributing to the general aims of the WGTRUTTA and, if successful, this will significantly enhance resourcing of delivery. However, core delivery does not depend on this ITN support. |
| Participants           | The Group is normally attended by some 15-20 members and guests.   |
| Secretariat facilities | Standard support to EG.  |

---

|  |  |
|--|--|
| Financial                              | No financial implications.   |
| Linkages to ACOM and groups under ACOM | Links to ACOM, FRSG, WGBAST who provide advice on Baltic sea trout, and WGDIAD regarding diadromous fish stocks, life histories, threats and sustainable use of the resource.  |
| Linkages to other committees groups    | The activities of this group will take forward the developmental work of WGTRUTTA, testing the implementation of assessment methods, and addressing key knowledge gaps. Links will be fostered with the The Working Group on Cumulative Effects Assessments in Management (WGCEAM). This work will be closely associated with the ICES Ecosystem Observation Steering Group (EOSG) and by incorporating ToR D we will also link with the ICES Human Activities, Pressures and Impacts Steering Group (HAPISG) and any future work of the IEASG-WGSOCIAL. Working Group on Social Indicators. |
| Linkages to other organizations        | Links to the EU Commission and the Data Collection Framework / EU_Multi-annual Plan (MAP), and to the associated InterSessional Sub-Group (ISSG) on Diadromous Species. Links to the EU-funded research projects of SAMARCH (Interreg: France, England); RETROUT (European Regional Developmental Fund); MARGEN II (Interreg: Sweden, Denmark, Norway).  |

## **WG WIDE- Working Group on Widely Distributed Stocks**

*This resolution was approved on the resolution Forum in June 2023*

2022/2/FRSG20 The **Working Group on Widely Distributed Stocks (WG WIDE)**, chaired by Erling Kåre Stenevik, Norway, will meet 23-29 August 2023 in ICES HQ, Copenhagen, Denmark to:

- a ) Address generic ToRs for Regional and Species Working Groups.

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group no later than 14 days prior to the starting date.

WG WIDE will report by 4 September for the attention of ACOM.

*Only experts appointed by national Delegates or appointed in consultation with the national Delegates of the expert's country can attend this Expert Group*

## **WK MSE DEV - Workshop on MSE development**

*This resolution was approved on the Resolution Forum in September 2019. The meeting was postponed from 2019 to 2020 and again from 2020 to 2022 2023.*

2019/2/FRSG29 The **Workshop on MSE development (WK MSE DEV)**, chaired by Daniel Howell\*, Norway, will be established and meet from 26–28 September 2023 in Sukkarieta, Spain to:

- a) Allow developers to compare the different MSE tools under development in different regions around the world
- b) Identify areas where collaboration between development teams could be beneficial.

- c) Produce a catalogue of different MSE tools available, with the different areas of emphasis described for each.

WKMSSEDEV will report by 12 October 2023 for the attention of FRSG and ACOM.

## Supporting information

| Priority                               | The  |
|--|--|
| Scientific justification               | <p>Term of Reference a)<br/>Multiple tools for conducting Management Strategy Evaluations (MSEs) / Harvest Control Evaluations are in use and under development around the world. However, there is limited visibility of these tools outside their specific geographic area of use. It is likely that this isolation is resulting in much duplication of effort and giving greater possibilities for errors than a more collaborative approach would imply.</p> <p>Term of Reference b)<br/>Different MSE tools have been developed with different aims in mind (data rich, data poor, socio-economic,...), but there is limited visibility outside the geographic area that these tools have been applied to. Such a catalogue would both enable those contemplating running a MSE to be aware of existing tools that might aid them, and allow developers to identify and contact researchers with experience in specific topics.</p> <p>Term of Reference c)<br/>By having the development teams of a range of MSE tools in one place, it will be possible to compare the different tools, and identify the extent to which collaboration is possible. Specifically, the meeting will aim to produce guidelines about a common set of outputs, which would allow for greater transparency between MSE exercises, as well as making reviews easier.</p> <p>Term of Reference d)<br/>Produce a short document with MSE design and debugging tips based on the experiences of the MSE developers attending the meeting.</p> |
| Resource requirements                  | The research programs developing these MSE tools are under way, the only requirement is to provide a forum to allow the developers to share experiences  |
| Participants                           | Those directly involved in developing MSEs.  |
| Secretariat facilities                 | None.  |
| Financial                              | No financial implications.   |
| Linkages to advisory committees        | This would have an indirect link to ACOM, but there are no obvious direct linkages.  |
| Linkages to other committees or groups | WKG MSE2, Fisheries Resources Steering Group   |
| Linkages to other organizations        | This would link to work going in other fisheries institutes and jurisdictions (for example NOAA in the US, UBC in Canada, Maram in South Africa).  |

## WKBCOD – Benchmark Workshop for Northern Shelf cod stocks

*Approved on the Resolutions Forum in September 2022*

2021/2/FRSG41      A **Benchmark Workshop for Northern Shelf cod stocks** (WKBCOD 2023), chaired by Marie Storr-Paulsen, Denmark, and Noel Cadigan, Canada, and attended by two invited external experts Andrea Havron, USA, and Benoit Berges, Netherlands, will be established and will meet 22-24 November 2022 for a data compilation workshop (chaired by Marie Storr-Paulsen) and 20-24 February 2023 for a



five-day benchmark workshop (chaired by Noel Cadigan). Both meetings will take place at ICES HQ, Copenhagen, Denmark, with hybrid meeting access for all participants to:

- a) Evaluate the appropriateness of data and methods to determine both stock and sub-stock status and investigate methods for short term outlook, taking agreed or proposed management plans into account, for the stocks listed in the text table below combined. The evaluation shall include consideration of:
  - i. Stock identity and migration issues, taking into account the conclusions of WKNSCodID (2020) and WK6aCodID (2022) (in particular, the connectivity between cod in 4.a and 6.a, which are currently assessed within separate stock units);
  - ii. Recent and historical life-history data, split to sub-stock where possible;
  - iii. Protocols to disaggregate historic landings data spatially, and how these landings are used with the existing catch data for the North Sea and West of Scotland stocks;
  - iv. Additional data such as genetics, otoliths, vertebrae and morphometric samples;
  - v. Examining alternative assessment models that (1) combine the North Sea and West of Scotland stocks and (2) track sub-stock dynamics explicitly, to the current single stock models;
  - vi. Exploring impact of all tuning fleets and/or other available fishery-independent survey data (split to sub-stock where reasonable) on assessment estimates;
  - vii. Further consideration and/or inclusion of environmental drivers, multi-species information, and ecosystem impacts for stock and sub-stock dynamics in the assessments and outlook;
  - viii. Further consideration of mixed fisheries interactions;
- b) Agree and document the preferred method for evaluating stock and sub-stock status and short term forecast (projecting sub-stock dynamics if possible) and update the stock annex as appropriate. Knowledge about environmental drivers, including multispecies interactions, and ecosystem impacts should be integrated in the methodology where appropriate. If no analytical assessment method can be agreed, then an alternative method (the former single stock methods, or following the ICES data-limited stock approach) should be put forward;
- c) Re-examine and update (if necessary) MSY and PA reference points for cod sub-stocks (if possible) according to ICES guidelines (see Technical document on reference points);
- d) Re-examine and update (if necessary) the structure of advice, potentially for a combined Northern Shelf cod stock or individual cod sub-stocks;
- e) Develop recommendations for future improvements of the assessment methodology and data collection;
- f) As part of the evaluation:

- i) Conduct a 3-day data evaluation workshop. Stakeholders are invited to contribute data (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality. As part of the data compilation workshop, consider the quality of data including spatially disaggregated landings, discards and any estimates of misreported landings;
- ii) Following the Data Evaluation Workshop, produce working documents to be reviewed during the Benchmark meeting at least 7 days prior to the meeting.

| Stocks       | Stock leader  |
|--------------|---------------|
| cod.27.47d20 | Nicola Walker |
| cod.27.6a    | Helen Dobby   |

### **WKBGRENCOD – Benchmark Workshop on three Greenland cod (*Gadus morhua*) stocks**

*Approved on the Resolutions Forum in June 2022*

2021/02/FRSG39 A **Benchmark Workshop on three Greenland cod stocks (WKBGRENCOD)**, chaired by External Chair Rick Rideout\*, Canada, and ICES Chair, Arved Staby\*, Norway, and attended by invited external experts Helen Dobby, UK, and, Johan Lövgreen, Sweden, will be established and will meet 12–14 December 2022 for a data evaluation workshop (DEWK), and on 7–10 February 2023. Both meetings will take place at ICES HQ, Copenhagen, with hybrid meeting access for all participants. If additional time is needed to agree to reference points and the short-term forecast, the benchmark can agree to additional meeting days. Preparatory work on splitting of stocks based on DNA markers was conducted and presented at the NWWG 2022 meeting. Further evaluation of results will take place at a dedicated scoping workshop at DTU AQUA (Lyngby, Denmark) 27–30 September 2022. Stakeholders are invited to contribute data in advance of the data evaluation workshop (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality. WKBGRENCOD will work to:

- a) As part of the data evaluation workshop:
  - i) Consider the quality of data proposed for use in the assessment;
  - ii) Consider stock identity and migration issues;
  - iii) Make a proposal to the benchmark on the use and treatment of data for each assessment, including discards, surveys, life history, etc.
- 2) In preparation for the assessment methods workshop:
  - a) Following the DEWK, produce working documents to be reviewed during the Benchmark assessment meeting at least 14 days prior to the meeting.
- 3) As part of the assessment methods workshop, agree to and thoroughly document the most appropriate, data, methods and assumptions for:
  - a) Obtaining population abundance and exploitation level estimates (conducting the stock assessment);
  - b) Estimating fisheries and biomass reference points that are in line with ICES guidelines (see Technical document in reference points);

- 1) If additional time is needed to conduct the work and agree to reference points, a short additional reference point workshop will be scheduled to conduct this work.
- c) Conducting the short-term forecast.
- 4) As part of the assessment methods workshop, a full suite of diagnostics (regarding data, retrospective behaviour, model fit, predictive power etc.) should be examined as a whole to evaluate the appropriateness of any model developed and proposed for use in generating advice.
- 5) If no analytical assessment method can be agreed, then an alternative method (the former method, or following the ICES data-limited stock approach see WKLIFE X (<https://doi.org/10.17895/ices.pub.5985>) should be put forward by the benchmark;
- 6) Update the stock annex as appropriate; and
- 7) Develop recommendations for future improvements of the assessment methodology and data collection.

| Stock         | Description   | Model                              | ICES stock category | Assessors                           |
|---------------|---|------------------------------------|---------------------|-------------------------------------|
| cod.2127.1f14 | Cod ( <i>Gadus morhua</i> ) in ICES Subarea 14 and NAFO Division 1F (East Greenland, Southwest Greenland) | SAM                                | 1                   | Anja Retzel<br>Tanja Baagoe<br>Buch |
| cod.21.1      | Cod ( <i>Gadus morhua</i> ) in NAFO Subarea 1, inshore (West Greenland cod)                               | SAM                                | 1                   | Anja Retzel<br>Tanja Baagoe<br>Buch |
| cod.21.1a-e   | Cod ( <i>Gadus morhua</i> ) in NAFO divisions 1A–1E, offshore (West Greenland)                            | NA, Survey-trends based assessment | 3                   | Anja Retzel<br>Tanja Baagoe<br>Buch |

The Benchmark Workshop will report by 10 March 2023 for the attention of ACOM.

## **WKTAf- Workshop on Training for the Transparent Assessment Framework**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG40 The **Workshop on Training for the Transparent Assessment Framework (WKTAf)** chaired by Colin Millar and Cecilia Kvaavik (ICES) will meet online 24–25 January and 30-31 May 2023 to address the objectives below:

- a) Give an overview of existing analyses on TAF. These include fully completed assessments, partially completed assessments, data-limited stocks, and analyses that only focus on the preparation of survey indices, maturity, etc.
- b) Practical demonstrations and training of how assessments are transferred into, and run from within TAF. Assist people and answer any technical questions that arise. The Sessions are:
  - i) Overview of GitHub and git

- ii) Documenting and downloading different data sources and software
  - iii) Creating csv input data tables
  - iv) Running the model
  - v) Creating unrounded csv results tables for upload to ICES databases
  - vi) Creating formatted csv tables and plots for the report
  - vii) Generating a dynamic document containing plots and tables for the report
- c) Discussion and collection of user feedback on:
- i) R-scripts and workflow
  - ii) Web application (<https://taf.ices.dk>).

*Scheduled time will be set aside for TAF assistance in Benchmarks*

WKTAF will report by 1 April 2023 and 1 August 2023 for the attention of the Fisheries Resources Steering Group and ACOM, on the workshops' purpose and outcome, lessons learned, course material in annexes and list of attendees.

### Supporting Information:

|   |   |
|---|---|
| Priority:   | Very high   |
| Scientific justification and relation to action plan: | It is important to train stock assessors as efficiently as possible in the TAF framework in order to maximise the uptake of this initiative within the ICES stock assessment community. |
| Resource requirements:                                | 2 ICES staff (TAF developers)   |
| Participants:   | Stock assessors and stock coordinators.   |
| Secretariat facilities:                               | None.   |
| Financial:  | None.   |
| Linkages to advisory committee:                       | ACOM  |
| Linkages to other committees or groups:               | WGTAFGOV; Stock assessment EGs, ICES Training Group   |
| Linkages to other organizations:                      |   |

### **WKBELASMO 2023– Benchmark Workshop for selected elasmobranch stocks**

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG41      **A Benchmark Workshop for selected elasmobranch stocks** (WKBELASMO 2023), chaired by ICES Chair Alain Biseau\* (France) and External Chair Manuela Azevedo\* (Portugal), and attended by invited external experts Casper Berg (Denmark) and Henning Winker (FAO, GFCM), will be established and will meet online 28 November - 2 December 2022 for a data evaluation meeting and in ICES HQ, Copenhagen, Denmark, for a 5-day Benchmark meeting 20-24 March 2023 to:

- a) Evaluate the appropriateness of data and methods to determine stock status and investigate methods for short term outlook taking agreed or proposed

management plans into account for the stocks listed in the text table below. The evaluation shall include consideration of:

- i. Stock identity and migration issues;
- ii. Life-history data.
- iii. Review current sampling levels and adjust stratification levels for landings and discards accordingly;
- iv. Inclusion of recent scientific fishing surveys not yet considered in the assessment;
- v. Examine alternative assessment models to the current model;
- vi. Explore impact of all tuning fleets on assessment estimates;
- b) Agree and document the most appropriate method for evaluating stock status and (where applicable) short term forecast and update the stock annex as appropriate. If no analytical assessment method can be agreed, then an alternative method for providing advice (the former single stock methods, or following the ICES data-limited stock approach (see WKLIFE X (<https://doi.org/10.17895/ices.pub.5985>)) should be put forward;
- c) Re-examine and update (if necessary) MSY and PA reference points according to ICES guidelines (see Technical document on reference points);
- d) Develop recommendations for future improvements of the assessment methodology and data collection;
- e) As part of the evaluation:
  - i) Conduct a 5-day data evaluation workshop. Stakeholders are invited to contribute data (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality. As part of the data compilation workshop, consider the quality of data including discard and estimates of misreporting of landings;
  - ii) Following the Data evaluation, produce working documents to be reviewed during the Benchmark meeting at least 7 days prior to the meeting.

WKELASMO will report by 7 April 2023 for the attention of ACOM.

| Stocks       | Description   | Stock lead                       |
|--------------|---|----------------------------------|
| rjc.27.3a47d | Thornback ray ( <i>Raja clavata</i> ) in Subarea 4 and in divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat, and eastern English Channel) | Jurgen Batsleer, Katinka Bleeker |
| rjh.27.4c7d  | Blonde ray ( <i>Raja brachyura</i> ) in divisions 4.c and 7.d (southern North Sea and eastern English Channel)                                | Jurgen Batsleer, Katinka Bleeker |
| rjm.27.3a47d | Spotted ray ( <i>Raja montagui</i> ) in Subarea 4 and Divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat, and eastern English Channel)     | Jurgen Batsleer, Katinka Bleeker |

## WKSIDAC2 – Second Workshop on Stock Identification and allocation of catches of herring to stocks

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG42      A Second Workshop on Stock Identification and allocation of catches of herring to stocks (WKSIDAC2) chaired by Richard Nash\*, UK, and

Florian Berg\*, Norway, will meet at ICES HQ in Copenhagen, Denmark, 19–23 June 2023 (start and end at 13:00), to:

- a) Review recent status of genetic stock identification for herring and outstanding issues affecting identification accuracy/success
- b) Analysis of the optimal baseline requirements for stock assessment purposes, both for specific survey as well as commercial catches
- c) Outline a general description of prerequisites for the implementation of stock identification of herring
- d) Provide guidance on a retrospective correction of herring survey and catch time-series where necessary

WKSIDAC2 will report by 15 August 2023 for the attention of ACOM and WGBIOP.

Key stocks to focus on:

| Stock / component                      | Abbr. | Area                  |
|--|-------|-----------------------|
| Icelandic Summer Spawning Herring      | ISSH  | 27.5.a                |
| Norwegian Spring Spawning Herring      | NSSH  | 27.2.a                |
| North Sea Autumn Spawning Herring      | NSAS  | 27.4, 27.3.a, 27.7.d  |
| Downs Winter Spawning Herring          |       | 27.4.c, 27.7.d        |
| Western Baltic Spring Spawning Herring | WBSS  | 27.3.a, etc.          |
| Central Baltic Herring                 | CBH   | 27.3.d                |
| Irish Sea Herring                      | NIRS  | 27.7.aN               |
| Celtic Sea Herring                     | CSH   | 27.7.aS, 7.g-h, 7.j-k |
| 6a North Autumn spawning herring       |       | 27.6.aN               |
| 6a South 7bc herring                   |       | 27.6.aS, 7.bc         |

In addition, the following stocks may be considered as part of WKSIDAC 2.

|                                   |      |                |
|-----------------------------------|------|----------------|
| Norwegian Autumn Spawning Herring | NASH | 27.2.a         |
| Faroese Autumn Spawning herring   |      |                |
| Baltic Autumn spawning herring    | BASH | 27.3           |
| 6a North Spring spawning herring  |      | 27.6.aN        |
| Thames/Blackwater herring         |      |                |
| Clyde herring                     |      | 27.6.aN        |
| Herring in Divisions 7ef          |      | 27.7.e, 27.7.f |

## Supporting information

---

Priority                      High

---

---

Scientific justification Most herring populations are migratory and often congregate on feeding and wintering grounds where aggregations may consist of mixtures of individuals from several populations, thus the standard concept of ‘a herring stock’ within a geographical area such as a management unit is not straightforward to assume. The analysis of the genetic composition is becoming a widely and cost-effective tool for stock identification for separating herring into populations or stocks. Recent advances include Next Generation Sequencing (NGS) and Genotyping by Sequencing (GBS) based approaches have recently been developed and applied to e.g., herring (*Clupea harengus*), cod (*Gadus morhua*), boarfish (*Capros aper*) and horse mackerel (*Trachurus trachurus*) for marker development and screening of spawning samples. Given these developments, it is now timely to revisit this herring stock identification method after the conclusions of WKSIDAC in 2017 ([ICES, 2017](#)). The objectives of the workshop are to

- improve the accuracy and precision of the methods currently applied across laboratories
- outline a common generic approach in terms of methods
- draft guidelines for conducting stock-splits for assessment purposes
- provide new insights about spatio-temporal distribution areas of herring stocks.

The workshop will cover the ICES SubAreas 2, 3, 4, 5, 6 and 7. Manual descriptions will be drafted, specifying the areas/surveys relevant for the given method, hold details on minimum sampling size, stratification and other sampling related issues.

Undertaking ‘stock separation’ for the most recent time period i.e. going forward with a new sampling protocol using e.g. genetics is possible where appropriate samples have or are being obtained. Stock assessment, however, is reliant on a time-series of data where the stock information is known. Having the ability to retrospectively separate both survey and catch data to stock is important and this needs to predate any new genetic protocols which may be implemented. The Workshop will also consider a number of available data datasets that are available which could be used to separate the historical survey and catch data into the various stocks. These could include otolith archives, age and growth data etc.

---

|                                 |               |
|---------------------------------|---------------|
| Resource requirements           |               |
| Participants                    | 20-30         |
| Secretariat facilities          | Meeting rooms |
| Financial                       | None          |
| Linkages to advisory committees | ACOM          |

---

|                                       |        |
|---------------------------------------|--------|
| Linkages to other committees or group | WGBIOP |
| Linkages to other organizations       |        |

**WKRRCOD – Workshops on research needs and a roadmap for further research on cod in the northern shelf seas (including cod in the Celtic Seas)**

*Approved on the Resolutions Forum in September 2022*

*Two workshops to supplement the Greater North Sea cod benchmark, and add research needs including on cod in the Celtic Seas, leading to a roadmap for further research on cod in the northern shelf seas will be established.*

2022/2/FRSG44      **Workshops on research needs and a roadmap for further research on cod in the northern shelf seas (including cod in the Celtic Seas) (WKRRCOD)**, chaired by Anna Rindorf\*, Denmark, and Carl O’Brien\*, United Kingdom, will meet in Edinburgh, United Kingdom, 1–2 November 2022 to:

- a) With stakeholders and managers, identify evidence needs necessary to achieve management objectives of cod fisheries.
- b) Share plans for the assessment and advice for North Sea and Celtic Seas cod (include upcoming benchmark on North Sea cod and West of Scotland cod).
- c) Consider knowledge and data sources, potential methods and timetables by which further evidence can be incorporated into the scientific advisory process and identify where industry can provide evidence to underpin modelling and advice.

The first meeting of WKRRCOD will report by 21 November 2022 for the attention of the Fisheries Resources Steering Group and the Advisory Committee.

The second meeting, chaired by Anna Rindorf\*, Denmark, and Coby Needle\*, UK, will take place in Edinburgh, United Kingdom on 23 May 2023 to:

- d) List issues from stakeholders and fisheries managers which they perceive as suffering from further knowledge deficits and prioritise recommendations for research to improve scientific advice for cod.
- e) Produce a roadmap for the delivery of future research needs for the management of fisheries on cod and mixed demersal fisheries in southern shelf seas.

The second meeting of WKRRCOD will report by 6 June 2023 for the attention of the Fisheries Resources Steering Group and the Advisory Committee.

**Supporting information**

|                          |  |
|--------------------------|--|
| Priority                 | High   |
| Scientific justification | These meetings will offer input into the WKCOD benchmark process as well as looking strategically and longer term at the process of providing management advice for cod in the northern shelf complex. |
| Resource requirements    | Meeting space with breakout rooms in Edinburgh; hybrid facilities  |
| Participants             | 15-20  |
| Secretariat facilities   |  |
| Financial                |  |



|  |                           |
|--|---------------------------|
| Linkages to advisory committees        | ACOM                      |
| Linkages to other committees or groups | WGNSSK, WGCSE, WKCOD 2023 |
| Linkages to other organizations        |                           |

## **WKBSEALS 2023 – Benchmark Workshop for harp and hooded seals**

*Approved on the Resolutions Forum in March 2021 – Postponed until Spring 2023*

2022/2/FRSG45 **A Benchmark Workshop for harp and hooded seals (WKBSEALS)**, chaired by External Chair Alejandro Buren\*, Argentina, and ICES Chair Daniel Howell\*, Norway, and attended by two invited external experts Phil Hammond, UK, and Hans Skaug, Norway, will be established and will meet:

- by correspondence on 8 December 2021, for a Modelling planning workshop
- online throughout 2022 as needed
- in a physical meeting held at ICES Headquarters, Copenhagen, on 22-26 May 2023 for a Benchmark Workshop

BWKSEALS 2023 will:

- a) Evaluate the appropriateness of data and methods to determine stock status and investigate methods for providing harvest advice for the stocks listed in the text table below. The evaluation shall include consideration of:
  - i. Stock identity and migration issues;
  - ii. Life-history data;
  - iii. Hunt dependent and hunt independent data;
  - iv. Further inclusion of environmental drivers, multi-species information, and ecosystem impacts for stock dynamics in the assessments and outlook;
- b) For each stock, agree and document the preferred methods for evaluating stock status and harvest advice and produce stock annexes as appropriate. Knowledge about environmental drivers, including multispecies interactions, and ecosystem impacts should be integrated in the methodology to the extent possible;
- c) Re-examine and update (if necessary) the methods for setting biological limits for seal harvest as defined by ICES in 2005<sup>9</sup>;
- d) Review and summarise the evidence currently available to support the implementation of harvest control rules, identifying important knowledge gaps, especially in connection with potential changes to assessment model general formulation and/or specifics.

---

<sup>9</sup> Request from the Norwegian Government regarding Greenland Sea harp and hooded seals and White Sea/Barents Sea harp seals. *In* Report of the ICES Advisory Committee on Fishery Management, Advisory Committee on the Marine Environment and Advisory Committee on Ecosystems, 2005. ICES Advice 2005, Volume 3, Section 1.4.1.2. <http://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Advice/2005/ICES%20Advice%202005%20Volume%203.pdf>

- e) Develop recommendations for future improvements to the assessment methodology and data collection.
- and, will meet by correspondence in June 2023 to:
- f) Evaluate whether the current harvest control rules (see section 6.3. of ICES 2005)<sup>10</sup> are precautionary in light of potential acceptance of alternative model formulations and reference points from the benchmark.

Working documents to be reviewed during the Benchmark meeting at least 7 days prior to the meeting.

| Stocks  | Stock leader |
|---|--------------|
| Harp seals ( <i>Pagophilus groenlandicus</i> ) in subarea 1 (Barents and White sea stock)                     | Martin Biuw  |
| Harp seals ( <i>Pagophilus groenlandicus</i> ) in subareas 1, 2 and 14 and Division 5.a (Greenland Sea stock) | Martin Biuw  |
| Hooded seals ( <i>Cystophora cristata</i> ) in subareas 2, 5 and 14 (Greenland Sea stock)                     | Martin Biuw  |

The Benchmark Workshop will report by 31 August 2023 for the attention of the FRSG, ACOM and SCICOM

## **WKBNORTH – Benchmark workshop on Greenland halibut and redfish stocks**

*Approved on the Resolutions Forum in October 2022*

2022/2/FRSG46 A Benchmark workshop on Greenland halibut and redfish stocks (WKBNORTH), chaired by ICES Chair, Pamela Woods\* (Iceland) and Vladlena Gertseva\* (External Chair, USA), and attended by invited external experts Daniel Hennen (USA) and Paul Regular (Canada), will be established. WKNORTH will meet on 28 November to 2 December 2022 for a data evaluation workshop (DEWK), and on 13-17 February 2023 for the final benchmark workshop. Both meetings will take place at MFRI in Iceland (with hybrid access). If additional time is needed to agree to reference points and the short-term forecast, the benchmark can agree to additional meeting days. WKNORTH will work to:

- a) As part of the data evaluation workshop:
  - i) Consider the quality of data proposed for use in the assessment;
  - ii) Consider stock identity and migration issues;
  - iii) Make a proposal to the benchmark on the use and treatment of data for each assessment, including discards, surveys, life history, etc; and

---

<sup>10</sup> ICES. 2005. Report of the ICES/NAFO Working Group on Harp and Hooded Seals (WGHARP), 30 August–3 September 2005, St Johns, Newfoundland, Canada. ICES CM 2006/ACFM:06.

- iv) Stakeholders are invited to contribute data in advance of the data evaluation workshop (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality.
- b) In preparation for the assessment methods workshop:
  - i) Following the DEWK, produce working documents to be reviewed during the Benchmark assessment meeting at least 14 days prior to the meeting.
- c) As part of the assessment methods workshop, agree to and thoroughly document the most appropriate, data, methods and assumptions for:
  - i) Obtaining population abundance and exploitation level estimates (conducting the stock assessment);
  - ii) Estimating fisheries and biomass reference points that are in line with ICES guidelines (see Technical document on reference points);
    - 1) If additional time is needed to conduct the work and agree to reference points, a short additional reference point workshop could be scheduled to conduct this work.
  - iii) Conducting the short-term forecast.
- d) As part of the assessment methods workshop, a full suite of diagnostics (regarding for e.g. data, retrospective behaviour, model fit, predictive power etc.) should be examined as a whole to evaluate the appropriateness of any model developed and proposed for use in generating advice.
- e) If no analytical assessment method can be agreed, then an alternative method (the former method, or following the ICES data-limited stock approach see WKLIFE X (<https://doi.org/10.17895/ices.pub.5985>) should be put forward by the benchmark;
- f) Update the stock annex as appropriate; and
- g) Develop recommendations for future improvements of the assessment methodology and data collection.

The Benchmark Workshop will report by 17 March 2023 for the attention of ACOM.

| Stock                         | Description   | Assessors   |
|-------------------------------|---|---|
| <a href="#">ghl.27.1-2</a>    | Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ) in subareas 1 and 2 (Northeast Arctic)  | Elvar H. Hallfredsson, Institute of Marine Research (IMR)<br><br>Daniel Howell, Institute of Marine Research (IMR)  |
| <a href="#">ghl.27.561214</a> | Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland) | Jesper Boje, National Institute of Aquatic Resources (DTU Aqua) and Greenland Institute of Natural Resources (GINR);<br><br>Bjarki Þór Elvarsson, Marine and Freshwater Research Institute (MFRI) |
| <a href="#">reg.27.561214</a> | Golden redfish ( <i>Sebastes norvegicus</i> ) in subareas 5, 6, 12, and 14 (Iceland and   | Kristján Kristinsson, Marine and Freshwater Research Institute (MFRI)   |

|                             |  |   |
|-----------------------------|--|---|
|                             | Faroes grounds, West of Scotland, North of Azores, East of Greenland)  |   |
| <a href="#">reb.27.5a14</a> | Beaked redfish ( <i>Sebastes mentella</i> ) in Subarea 14 and Division 5.a, Icelandic slope stock (East of Greenland, Iceland grounds) | Kristján Kristinsson, Marine and Freshwater Research Institute (MFRI) |

### WKBSALMON – Benchmark Workshop on Atlantic salmon (*Salmo salar*) in the North Atlantic

2022/2/FRSG47 A Benchmark Workshop on Atlantic salmon (*Salmo salar*) in the North Atlantic, chaired by External Chair xxx (xxx) and ICES Chair Jonathan White (IR) and attended by invited external experts xxx (xxx) and xxx (xxx). The benchmark will be established as a series of workshops that will work to:

- a) scope the work and create a workplan for the benchmark;
  - i) update the BWKSalmon ToRs with chairs and reviewer names, workshop dates for ToRs 2 and 3;
  - ii) complete Table 1
- b) compile data and evaluate quality;
- c) develop the assessment and associated tools to provide advice;
- d) document all methods and data used and agreed upon by the benchmark in the stock annex; and
- e) develop recommendations for future improvements of the assessment methodology and data collection.

Re: ToR 1. BWKSalmon will meet at ICES HQ 15-17 November 2022 for a scoping workshop. This scoping workshop will work to identify not only the scope of work for the benchmark, but it will also lay out the work plan and schedule for subsequent ICES workshops that are part of this benchmark and identify relevant participants and external experts to contribute to this work. Dennis Ensing (UK) and Etienne Rivot (France) will chair this meeting.

Re: ToR 2. BWKSalmon will conduct a data evaluation workshop, which may include the publication of an ICES data call to support this work. This workshop will consider the quality of input data proposed for use in the assessment, make a proposal to the benchmark on the use and treatment of data for each assessment, including discards, surveys, life history, fishery-dependent, recreational, etc. Stakeholders are invited to contribute data (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality.

Re: ToR 3. In preparation for the methods workshop, working documents and input data should be delivered by the participants following the DEWK and at least 14 days in advance of the methods workshop. The methods workshop should agree to and thoroughly document the most appropriate method for conducting the stock assessment, the method and values for fisheries and biomass reference points that follow the best available science (i.e. taking into consideration the recommendations made by WKREF1 and WKREF2) and are in line with ICES guidelines (see the latest Technical guidance on reference points);

As part of the methods workshop, knowledge about environmental drivers, including multispecies interactions, and ecosystem impacts should be integrated in the methodology. A full suite of diagnostics (regarding data, retrospective behaviour,

model fit, predictive power etc.) should be examined as a whole to evaluate the appropriateness of any model developed and proposed for use in generating advice.

Please note the work presented in WGNAS, WKSalmModel, WKSalm1 and WKSalm2 that was done in preparation of this this benchmark.

Re: ToR 4. The method for conducting the short-term forecast and determination of fishing mortality and biomass reference points should also be included as part of this work. This can be done through the stock annex and in the Transparent Assessment Framework (TAF).

If additional time is needed to agree to reference points and the short-term forecast, the benchmark can agree to additional meeting days.

If no analytical assessment method can be agreed, then an alternative method (the former method, or following the ICES data-limited stock approach see WKLIFE X (<https://doi.org/10.17895/ices.pub.5985>) should be put forward by the benchmark.

The Benchmark Workshop will report for the attention of ACOM. Date to be determined as the workplan progresses.

**Table 1** The benchmark scope. To be completed by the BWKsalmon scoping meeting. Identify the people/institutes responsible for assessments and data as well as the objective of the benchmark for Atlantic salmon in each commission area. If the benchmark will not conduct work for Atlantic salmon in a commission area, it should be stated here.

| Salmon Assessment Areas  | Stock leaders                          | ICES stock category and assessment method  |
|--|--|--|
| Atlantic salmon ( <i>Salmo salar</i> ) from North America <a href="http://sal.nac.all">sal.nac.all</a>   | Assessment:<br><br>Data:<br><br>Other: | Category 1<br><br>Analytical model, run-reconstruction models and Bayesian forecasts, taking into account uncertainties in the data.<br><br>Benchmark objective to transition to:  |
| Atlantic salmon ( <i>Salmo salar</i> ) in Northeast Atlantic and Arctic Ocean <a href="http://sal.neac.all">sal.neac.all</a>                       | Assessment:<br><br>Data:<br><br>Other: | Category 1<br><br>Analytical model, run-reconstruction models and Bayesian forecasts, taking into account uncertainties in data and process error (results presented in a risk analysis framework).<br><br>Benchmark objective to transition to: |
| Atlantic salmon ( <i>Salmo salar</i> ) in Subarea 14 and NAFO division 1 (east and west of Greenland) <a href="http://sal.wgc.all">sal.wgc.all</a> | Assessment:<br><br>Data:               | Category 1<br><br>Analytical model, run reconstruction models and Bayesian forecasts, taking into account uncertainties in the data.   |

|  |        |                                       |
|--|--------|---------------------------------------|
|  | Other: | Benchmark objective to transition to: |
|--|--------|---------------------------------------|

## WKRRCCSS2 – second Workshop on the Research Roadmap for Channel and Celtic Seas Sprat

*Approved in Resolutions meeting on 9 November 2022*

2022/2/FRSG48 A second **Workshop on the Research Roadmap for Channel and Celtic Seas Sprat** (WKRRCCSS2), chaired by Cormac Nolan\*, Ireland, and Campbell Pert\* (TBC), United Kingdom, will meet in ICES HQ, Copenhagen, Denmark, 23 March 2023 to:

- a) Review, consider and collate available sprat data for the Channel and Celtic Seas, particularly catches by statistical rectangle or C-square if possible;
- b) Review progress on the research roadmap for Channel and Celtic Seas Sprat (developed during the first workshop in Sept. 2022)

WKRRCCSS2 will report by 10 April 2023 for the attention of the Fisheries Resources Steering Group and the ICES Advisory Committee.

### Supporting information

|  |   |
|--|---|
| Priority                               | The current activities of this group should lead to the identification of sprat stocks in the Channel and Celtic Seas and ultimately result in improvements to the basis of their advice. Priority is therefore high.   |
| Scientific justification               | Term of Reference a)<br>A data call for historic sprat catch data will be issued for the relevant ICES areas. The results of this data call will be reviewed and collated. This should be a significant improvement on the catch data available at present and also provide insight into possible stock boundaries that can be investigated further.<br>Term of Reference b)<br>A research roadmap was developed during the first workshop held in September 2022. Many of the first steps on this roadmap involved coordinated sampling effort. ToR b of the proposed second workshop will aid this collaboration and provide an opportunity to review progress. |
| Resource requirements                  | The research programmes that provide the main input to this group are mostly underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.   |
| Participants                           | 10-15 members are anticipated.  |
| Secretariat facilities                 | One meeting room.   |
| Financial                              | No financial implications.  |
| Linkages to advisory committees        | Fisheries Resources Steering Group and the ICES Advisory Committee.   |
| Linkages to other committees or groups | Direct and immediate link to the Herring Assessment Working Group (HAWG). Other linkages to working groups on Celtic Seas ecosystem and data-limited stocks.  |
| Linkages to other organizations        | The work of this group is closely aligned with similar work and research being conducted by and for national organisations such as Marine Institute, CEFAS and Marine Scotland.   |

## WKBSEABASS 2023 – Benchmark Workshop on Seabass stocks

### *Defer for further discussion on the Resolution Forum when ICES Chair has been identified*

2022/2/FRSG49 A **Benchmark Workshop** for Seabass stocks in Divisions 4.b-c, 7.a, and 7.d-h (central and southern North Sea, Irish Sea, English Channel, Bristol Channel, and Celtic Sea) and Seabass in divisions 8.a-b (northern and central Bay of Biscay) (WKBASS) **composed of three meetings**; a Stock ID, a data evaluation and a benchmark workshop.

The stock ID workshop will be chaired by David Murray\*, UK and attended by two invited experts Naiara Rodríguez-Ezpeleta, Spain, and Florian Berg, Norway. The workshop will meet online 29 November to 1 December 2022.

The data evaluation and benchmark workshops will be chaired by External Chair Massimiliano Cardinale\*, Sweden, and ICES Chair xxxx xxx, and attended by three invited external experts xxxx, , xxx, and xxx. The data evaluation workshop will meet online for four days in June 2023 and the benchmark workshop will meet for five days in the ICES HQ in November 2023 to:

#### **As part of the Stock ID workshop**

- a) Review information on stock identification for bss.27.4bc7ad-h and bss.27.8ab and conduct a comparative review of Atlantic seabass population structure, including critical evaluation of inferences from each source of information, to build up a picture of seabass stock structure in Celtic Sea, Bay of Biscay and adjacent areas, based on the following:
  - i) Distribution and movements of different life-stages of seabass, including changes over time, inferred from:
    - 1) Tagging
    - 2) Scientific Surveys
    - 3) Commercial landings
    - 4) Dispersal models (e.g. of larva/juveniles)
  - ii) Genetic analyses
  - iii) Otolith microchemistry
  - iv) Morphometrics and meristics
  - v) Life-history and parasites
  - vi) Other approaches not listed above
- b) Based on the evidence from ToR 1, formulate scenarios for seabass stocks in the Celtic Sea, Bay of Biscay and adjacent areas, and assess the evidence-based plausibility of each of these scenarios (including current definitions).
- c) Consider the practical implications, for data, particularly time-series of catch data and year class strength, and mixing rates of each of the scenarios in ToR 2, and how any difficulties might be dealt with. For example, considering spatial components with mixing in a single model has different implications for data compared to split stock units. Considerations should include how to deal with changes over time.
- d) Make recommendations for which seabass stock scenario(s) to take forward in the forthcoming seabass benchmark, including in what format data should be requested and prepared.

#### **As part of the data evaluation workshop**

- e) Conduct a 4-day data evaluation workshop (DEWK). Stakeholders are invited to contribute data (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality. Data, particularly catch information, should be collated as far back in time as possible. As part of the data compilation workshop consider the quality of data including discard and estimates;
- f) Make a proposal to the benchmark on the use and treatment of data for each assessment, including discards, surveys, life history, recreational fisheries etc.
- g) Following the DEWK, produce working documents to be reviewed during the Benchmark workshop at least one month prior to the workshop.

**As part of the benchmark workshop**

- h) Evaluate the appropriateness of data and methods to determine stock status and investigate methods for short term forecast taking agreed or proposed management plans into account for the stocks listed in the text table below. The evaluation shall include consideration of:
  - i) Life-history data;
  - ii) Fishery-dependent and fishery-independent data;
  - iii) Further consideration of environmental drivers, multispecies information, and ecosystem impacts for stock dynamics in the assessments and outlook
- i) Agree and document the most appropriate method for evaluating stock status and (where applicable) short-term forecast and update the stock annex as appropriate. Knowledge about environmental drivers, including multispecies interactions, and ecosystem impacts should be integrated in the methodology.
- j) A full suite of diagnostics (regarding data, retrospective behaviour, model fit etc.) should be examined as a whole to evaluate the appropriateness of any model developed and proposed for use in generating advice.

If no analytical assessment method can be agreed, then an alternative method for providing advice (ideally one of the WKLIFE X (<https://doi.org/10.17895/ices.pub.5985>) methods should be put forward;

- k) Re-examine and update (if necessary) MSY and PA reference points according to ICES guidelines (see Technical document on reference points)).
- l) Draft stock annexes for each of the stocks part of the benchmark outcomes.
- m) Develop recommendations for future improvements of the assessment methodology and data collection;
- n) Provide detailed guidance on the mechanics of the seabass allocation tool.

| Stock   | Assessment Lead |
|---|-----------------|
| <b>bss.27.4bc7ad-h</b> – Seabass ( <i>Dicentrarchus labrax</i> ) in Divisions 4.b-c, 7.a, and 7.d-h (central and southern North Sea, Irish Sea, English Channel, Bristol Channel, and Celtic Sea) | Gwladys Lambert |
| <b>Bss.27.8ab</b> – Seabass ( <i>Dicentrarchus labrax</i> ) in divisions 8.a-b (northern and central Bay of Biscay)   | Mathieu Woillez |

The Benchmark Workshop will report by 31 January 2024 for the attention of ACOM.



**WKLIFE XI – The Workshop on the Development of Quantitative Assessment Methodologies based on Life-history traits, exploitation characteristics, and other relevant parameters for data-limited stocks**

*Approved in November 2022*

2022/2/FRSG50      **The Workshop on the Development of Quantitative Assessment Methodologies based on Life-history traits, exploitation characteristics, and other relevant parameters for data-limited stocks** (WKLIFE XI), chaired by Carl O'Brien (UK), Tobias Mildenerger\* (Denmark) and Simon Fischer\* (UK) will meet in Copenhagen, Denmark 16-20 January 2023, to further develop methods for stock assessment, stock status, and catch advice for stocks in ICES categories 2–6, including the clarification of key issues raised by the ICES Community when implementing methods developed by WKLIFE for use in the ICES advice. The workshop should address the following Terms of Reference:

- a) Summarize recent work by the scientific community, including published papers and exploratory work on Empirical rules and production models; review and address these publications with respect to ICES advice;
- b) Review recommendations (e.g. from WKMSYSPiCT1, WKMSYSPiCT2) and requests for clarification made by ICES groups (e.g. Elasmobranch, Celtic Seas and Deep Seas advisory processes) on the application of the methods presented in WKLIFE X Annex 3 and provide clear and concise feedback on issues raised and incorporate into suggested updates to the ICES Guidance, as appropriate. These issues include:
  - i) Application of methods to species with specific elasmobranch and deep-water life history strategies;
  - ii) Advisable time series length for surveys and indices as well as how best to incorporate variability in the index for use in Surplus production model methods;
  - iii) Definition and use of  $I_{trigger}$  and  $I_{loss}$ ;
  - iv) Guidance on changing the frequency of application of the rules (i.e. using a method designed for biennial advice on an annual basis);
  - v) Describe how sources of uncertainty are incorporated in each of the Empirical methods and examine the robustness of the parameter values;
  - vi) Provide detailed guidance on how to tune and test the methods, including the choice of multiplier  $m$ , for stock-specific application;
  - vii) Under what conditions could a catch advice increase from zero using current methods?
  - viii) Address other relevant issues as identified by WKLIFE and ACOM. A detailed list of issues for WKLIFE's consideration will be provided in advance of the workshop.
- c) Discuss work relevant to WKLIFE to advance ICES data-limited advice for categories 2-6 and scope future directions. Draft a roadmap of aims, goals and perceived requirements for the coming 5 years. Potential elements that may be considered are:
  - i) Assessment methods (e.g. length-based methods and indicators and Production models);

- ii) Future directions and priorities for method development for advice on catch and stock status for ICES stocks for which there is no index of abundance (categories 4, 5 and 6);
- iii) Approaches for specific life-history types (e.g. short-lived species, *Nephrops*, elasmobranchs, and deep-water species);
- iv) Quantifying and accounting for uncertainty (e.g. precautionary buffers and ensemble models);
- v) Considerations of moving away from single-stock single-species methods towards including mixed fisheries, multi-species, ecosystem, or integrated approaches; and,
- vi) Input data diagnostics, requirements, and standardisation.

WKLIFE XI will report to ACOM no later than **17 February** 2023.

### Supporting Information

---

Priority:

High. ICES provides advice on more than 260 stocks on an annual basis and more than 60% of these stocks are in categories 2-6. The development and testing of operational advice rules for these stocks is urgently needed. WKLIFE is the premier venue for method development and discussion of stock assessments and advice approach for stocks in categories 2-6.

---

ICES is working to provide catch advice for all stocks that is in line with the Precautionary approach. The methods developed and tested by WKSLEDLS and WKLIFE are key to ICES advancements in this area.

WKLIFE is asked to explicitly address the following issues regarding the application of the methods as described in WKLIFE X.

*Deep-water and elasmobranch stocks*

The suitability of the methods for the suite of different life histories (e.g. geographic separation of life stages, sex changes) represented in the ICES stock list. Are the methods suitable for DEEP stocks?

Scientific justification and relation to action plan:

Comment on the value of additional testing across a wider-range of life history strategies resolve the issues in using these methods by stocks assessed by WGEF and WGDEEP.

*M value selection*

Enhanced guidelines for stock-specific simulations to set m at a value other than the default would be very useful.

*Incorporating uncertainty in the methods*

Describe how uncertainty is incorporated in the Empirical methods and SPiCT.

*I<sub>loss</sub> and I<sub>trigger</sub>*

Provide clarifying guidance on the selection and use of *I<sub>loss</sub>* and *I<sub>trigger</sub>*

*Advice frequency*

---

|   |   |
|---|---|
|   | Each method was tested and developed to provide advice on an annual or biennial frequency. What are the consequences of changing the periodicity of the advice (can the biennial advice methods be applied every year if necessary? Would parameter values need to be changed?) |
| Resource requirements:                  | -   |
| Participants:                           | Stock assessment experts and modellers, with a special focus on MSE.  |
| Secretariat facilities:                 | SharePoint site and report formatting   |
| Financial:                              | -   |
| Linkages to advisory committee:         | ACOM  |
| Linkages to other committees or groups: | All assessment fish stock assessment working groups, WGMG   |
| Linkages to other organizations:        | ICCAT, GFCM, FAO  |

## WKRFSFA – Workshop on Recreational Fisheries in Stock Assessments (WKRFSFA)

*Approved in Resolutions meeting on 9 November 2022, moved from DSTSG to FRSG*

**2022/2/FRSG51** The **Workshop on Recreational Fisheries in Stock Assessments (WKRFSFA)**, chaired by Zachary Radford\*, UK, and Martina Scanu\*, Italy, will be established and meet in Sukarrieta, Spain, on 3–5 July 2023 to:

1. Identify key issues preventing the inclusion of recreational fisheries in advisory and stock assessment processes ([Science Plan code 5.1](#)).
2. Create a decision tree for the inclusion of recreational fisheries in the advisory and stock assessment processes ([Science Plan codes 5.1 and 3.1](#)).
3. Develop agreed criteria for the inclusion of recreational data based on the data quality and the contribution of recreational fisheries to the total catch for a given stock ([Science Plan code 3.1](#)).

ToRs b) and c) will consider the data profiling tool developed by ICES (<https://www.ices.dk/data/tools/Pages/Data-profiler.aspx>). WKRFSFA will report before July 2023 for the attention of the SCICOM, ACOM and WGRFS.

### Supporting information

|          |  |
|----------|--|
| Priority | The activities of this workshop will aid the inclusion of recreational fisheries data into the stock assessments and advisory process. Currently, recreational fishing mortalities are not explicitly accounted for in many stock assessment processes nor are covered in ICES advice. This is becoming increasingly important due to the recognition of recreational fisheries impacts on specific stocks, increasing availability of recreational survey data, and increasing pressure from the angling community. As such, this workshop is considered both timely and to have a high priority. |
|----------|--|

|  |   |
|--|---|
| Scientific justification               | <p>Many countries are quantifying catches by marine recreational fisheries (MRF) as required under the EU-MAP. A review by Radford <i>et al.</i> (2018<sup>11</sup>) estimated that between 2 and 43% of total removals could be from MRF. However, only a small number of stocks have MRF data included in the assessment process (e.g. sea bass, western Baltic cod, North Sea, Irish Sea cod), generally due to issues with data availability, uncertain levels of recreational catch, and/or challenges with inclusion in the assessment methods. As a result, recreational fisheries mortality is not accounted for explicitly in many stock assessments. MRF survey data is increasingly available, providing an opportunity for better inclusion in stock assessment and advice.</p> <p>The Working Group on Recreational Fisheries Surveys (WGRFS) has started to develop approaches to prioritise stocks where recreational catches are important and should be included in stock assessments and advisory processes. There are many different approaches for inclusion in the advisory process (e.g. North Sea cod) or inclusion of data in assessment models (e.g. sea bass, western Baltic cod). Hence, a consistent and robust approach is needed that is co-developed by experts in recreational fisheries and stock assessment.</p> <p>To facilitate this a decision-tree will be developed covering the different approaches for inclusion in the advisory process and, where possible, in the stock assessment models. This should account for the importance of MRF relative to commercial fisheries and quality of the MRF data available.</p> <p>ToRs b) and c) will consider the data profiling tool developed by ICES (<a href="https://www.ices.dk/data/tools/Pages/Data-profiler.aspx">https://www.ices.dk/data/tools/Pages/Data-profiler.aspx</a>). Final inclusion of recreational catches in stock assessment should be considered and agreed at relevant benchmark processes.</p> |
| Resource requirements                  | The research and data collection programmes that will provide the main inputs to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.  |
| Participants                           | The workshop will be attended by 20–25 individuals from the ICES recreational fisheries, advisory, and stock assessment communities and, where relevant, academics and other stakeholders.  |
| Secretariat facilities                 | None beyond shared facilities and editorial support for the report.   |
| Financial                              | No financial implications.  |
| Linkages to advisory committees        | ACOM, SCICOM  |
| Linkages to other committees or groups | It is also very relevant to the WGRFS, FRSG, DSTSG, and most of the assessment working groups (e.g. WGCSE, WGNSSK, WGBIE, WGBFAS, AFWG).  |
| Linkages to other organizations        | The work of this group is closely aligned with similar work in GFCM.  |

<sup>11</sup> Radford, et al. (2018). The impact of marine recreational fishing on key fish stocks in European waters. PLoS ONE. 13. e0201666. 10.1371/journal.pone.0201666.

## WKBMSPiCT2 – Benchmark workshop 2 on development of MSY advice using SPiCT

*Approved on the Resolutions Forum in August 2022*

2022/WK/FRSG52 **Benchmark workshop 2 on development of MSY advice using SPiCT** (WKBMSPiCT2), chaired by Henning Winkler, and Massimiliano Cardinale, Sweden, and attended by invited external experts Casper Berg, Denmark, Alexandros Kokkalis, Denmark, and Tobias Middleberger, Denmark, will be established and meet online for two days in September 2022 (7–8 September) for model learning sessions with SPiCT developers; 11–13 October 2022 for a data compilation workshop (DCWK), and 9–13 January 2023 for the final assessment workshop. WKMSYPiCT2 will evaluate the appropriateness of data and the use of the Surplus Production in Continuous Time (SPiCT) to provide MSY advice for selected stocks. The specific ToRs for this benchmark workshop are:

- a) Collate necessary data and information for the application of SPiCT for the stocks listed in Annex 1 prior to the data evaluation workshop;
- b) Review the available data and make recommendations on the most appropriate series to be used for SPiCT and potential improvements to eliminate biases;
- c) Apply the SPiCT methodology and determine the appropriateness of the data and the methodology to determine stock status for each of the stocks listed using the guidance developed following WKLIFEVII, WKLIFEVIII, WKLIFEIX, and [ICES 2022](#);
- d) For stocks where the methodology is appropriate, determine the methods to derive the parameters for the catch forecast using the harvest control rule for providing MSY advice using SPiCT;
- e) Prepare the stock annex for those stocks where SPiCT is considered appropriate for providing MSY advice;
- f) Provide recommendations for improving the guidance and training for the application of SPiCT and for deriving MSY advice.

WKMSYPiCT2 will report by 20 January 2023 for the attention of ACOM.

### Supporting information

|  |   |
|--|---|
| <b>PRIORITY</b>                                      | Very high. ICES provides advice on more than 260 stocks and more than 60% of these stocks are in categories 3–6 where currently MSY advice is not provided. With the development of approaches to provide MSY advice for category 3–4, it is imperative that these approaches be implemented as soon as possible.   |
| Scientific justification and relation to action plan | <p>Following on a request from the European Commission through DG MARE, to improve the scientific assessment of some category 3–6 stocks, ICES has held a series of workshops (WKLIFE) to develop methodologies that would allow to provide MSY advice (see <a href="#">WKLIFEIX</a>).</p> <p>Currently, ICES provides advice for category 3–6 stocks with the precautionary approach. To provide MSY advice for many of these stocks, ICES through WKLIFEVII, WKLIFEVIII and WKLIFEIX has developed a coherent framework for category 3-4 stocks where available data would permit the use of SPiCT .</p> <p>The purpose of the workshop is to conduct a benchmark peer review of the application of the SPiCT approach to provide MSY advice for selected stocks. The selected stocks to be considered in this benchmark was determined based on the availability of appropriate data and capacity.</p> |

---

n addition to producing the Stock Annex for stocks where the method is appropriate, the workshop will serve to provide recommendations to improve the guidance for the method as well as potential training.

---

## **WKMIXFISH2 – Scoping workshop on next generation of mixed fisheries advice 2.**

*Approved on the Resolutions Forum in January 2023*

2022/WK/FRSG43 The second **Scoping workshop on next generation of mixed fisheries advice (WKMIXFISH2)**, chaired by Paul Dolder\*, UK, and Marc Taylor\*, Germany, will meet on 1–2 March 2023 in ICES HQ, Copenhagen to:

Review the current scenario-based approach for communicating mixed fisheries considerations to establish its utility and usability for informing management decisions.

- a) Identify alternative approaches, including the steps necessary to transition to advice, establishing the questions to be answered from managers, including potential operational priorities and objectives to manage mixed fisheries.
- b) Review current assumptions on plausible fleet dynamics and behavior (e.g. quota share, effort distribution, catchability...) and identify ways to improve them given available data and models.
- c) Identify key fleet-based information of interest to managers and stakeholders as well as how best to communicate this information clearly and transparently.
- d) Develop a workplan for proposed changes to MIXFISH advice to be presented and reviewed at a second workshop (WKMIXFISH3) in March 2024.

WKMIXFISH2 will report by 31 March 2023 to the attention of the ACOM Committee.

The plan is for a two-part workshop, with WKMIXFISH3 to take place in March 2024 to present proposals for changes to MIXFISH advice developed between the two meetings.

### **Supporting Information**

---

#### **Priority**

Mixed fisheries considerations are requested by several ICES clients.

While they were first delivered in 2009 for the North Sea, there are still basic gaps on how mixed fisheries considerations are used, what is needed that is not yet provided, validity of assumptions made, and how to communicate them. The activity of this working group will enable ICES to close the existing knowledge gaps and to reshape the advice to fulfill clients needs and make it more informative. Consequently, these activities are considered to have a high priority.

---

#### **Scientific justification**

ToR [a] There is a lack of knowledge on how mixed fisheries considerations are used by clients to shape fisheries management. An enhanced knowledge of how they are used could facilitate the further development of the approach and the improvement of the communication.

ToR [b] Currently the output of mixed fisheries analyses is not an advice per se but a battery of scenarios about consequences of single stock advice. A better understanding of the objectives and priorities in the management of mixed fisheries would facilitate the transition to provision of advice.

ToR [c] will allow to advance in the validation of mixed fisheries models implementation and building trust in the output of the modelling approaches used.

ToR [d] Mixed fisheries considerations are based in complex model implementations with multiple dimensions. Presenting the output of those models is a challenge and it requires finding the right balance between clarity and utility. In fact, some currently-provided plots have been criticized for being difficult to understand. Identifying the outputs and the format that is useful and informative for the end users will allow the group to present the output adequately and tailored to the user's needs.

|   |  |
|---|--|
| <b>Resource requirements</b>                  | Some support will be required from the ICES Secretariat  |
| <b>Participants</b>                           | The Group is normally attended by some 15–20 members and guests                                    |
| <b>Secretariat facilities</b>                 | SharePoint site provision and Atlantic room; an extra room for breakout groups would be beneficial |
| <b>Financial</b>                              | No financial implications.   |
| <b>Linkages to advisory committees</b>        | ACOM   |
| <b>Linkages to other committees or groups</b> | WGMIXFISH-Methods and WGMIXFISH-advice   |
| <b>Linkages to other organizations</b>        | STECF – Fisheries Dependent Information expert group.  |

## WKFO2 – Workshop on Fisheries Overviews data and figures

*Approved on the Resolutions Forum - January 2023*

2022/WK/FRSG44 **Workshop on Fisheries Overviews (WKFO2)** chaired by Kristjan Kristinsson\*, Iceland, and Youen Vermard\*, France, will be established and will meet via online meeting 15-17 May 2023 to:

- a) Critically review data used in Fisheries Overviews and make suggestions for improving data usage in terms of appropriateness and suitability.
- b) Critically review scripts to produce figures in Fisheries Overviews and make suggestions for ensuring delivery of complete documentation.
- c) Consider proposing alternative formats to the current figures and/or new figures utilising new data sources.

WKFO2 will report by 23 June 2023 for the attention of ACOM.

### Supporting information

|                 |   |
|-----------------|---|
| <b>Priority</b> | High priority. Fisheries Overviews (FOs) are part of the recurrent advice in the Administrative Agreement signed between the EU and ICES, and key mechanism for ICES to deliver its advice on ecosystem based management. |
|-----------------|---|

|   |   |
|---|---|
| <b>Scientific justification</b>               | FOs are available for most ecoregions. However for most ecoregion the database used to produce the Fisheries Overviews do not meet the FAIR principles and many are relying on the STECF FDI data base that is not anymore fully publicly available. The ICES RDBES might be an alternative database to produce most of the figures but its use needs to be investigated.<br><br>The dedicated workshop will therefore discuss: i) database used for the different figure, ii) their conformity with FAIR principles and future availability, iii) provide a description of data and methods used to produce all figures, iv) propose alternative figures where needed. |
| <b>Resource requirements</b>                  |   |
| <b>Participants</b>                           | The WK will be attended by experts contributing to FOs, include on mixed fisheries, as well as ACOM members responsible for delivery of FOS for particular ecoregions.  |
| <b>Secretariat facilities</b>                 | Setting up webex calls.   |
| <b>Financial</b>                              | No financial implications.  |
| <b>Linkages to advisory committees</b>        | Direct link to ACOM.  |
| <b>Linkages to other committees or groups</b> | AFWG, HAWG, NWWG, NIPAG, WGWIDE, WGBAST, WGBFAS, WGNSSK, WGCSE, WGDEEP, WGBIE, WGEEL, WGEF, WGHANSA, WGNAS, WGMIXFISH, WGBYC  |
| <b>Linkages to other organizations</b>        | OSPAR, HELCOM, NEAFC, RAC's etc.  |

### **WKPANDLTMS – Workshop on a long-term management strategy evaluation for the Northern shrimp (*Pandalus borealis*) in divisions 3.a and 4.a East (Skagerrak and Kattegat and northern North Sea in the Norwegian Deep)**

*Approved on the Resolutions Forum 1 February 2023*

2022/WK/FRSG45            The Workshop on a long-term management strategy evaluation for the Northern shrimp (*Pandalus borealis*) in divisions 3.a and 4.a East (Skagerrak and Kattegat and northern North Sea in the Norwegian Deep) (WKPANDLTMS), chaired by Coïlin Minto, and attended by invited external expert Alex Kokkalis, Denmark, will be established and meet 8–10 February 2023 in ICES HQ, Copenhagen, Denmark, to work on a response to a request from the United Kingdom and Norway. The work will be to:

- a) Evaluate the proposal for a long-term management strategy for *Pandalus* in Subdivision 3.a.20 and Division 4.a East fishery as specified in the Joint DGMARE and Norway request;
- b) Prepare the first draft of the advice on this request.

WKPANDLTMS will report by 28 February 2023 for the attention of the Fisheries Resources Steering Group and the ICES Advisory Committee.

### **Supporting Information**

|   |  |
|---|--|
| Priority:   | Very high  |
| Scientific justification and relation to action plan: | To answer the joint request from DGMARE and Norway |



|   |  |
|---|--|
| Resource requirements:                  | All resources needed are already allocated.  |
| Participants:                           | Core <i>Pandalus</i> and MSE experts. Two reviewers will also attend the workshop                                    |
| Secretariat facilities:                 | SharePoint site and meeting space at ICES Headquarters is requested for this workshop. Standard secretarial support. |
| Financial:                              | As it is a special request costs will be supported by the advice requesters  |
| Linkages to advisory committee:         | ACOM   |
| Linkages to other committees or groups: | NIPAG  |
| Linkages to other organizations:        | Norwegian Ministry of Trade, Industry and Fisheries<br>DGMARE  |

### **WKSANDEEL – Benchmark Workshop on Sandeel (*Ammodytes* spp.) in 2022**

*Updates from January 2023: The process has been extended. In addition to the meetings held in 2022, Sandeels will meet online the 23-24 and 28 March 2023. The MSE workshop will take place 15 to 16 of May 2023.*

#### *Approved March 2022*

2021/WK/FRSG32 **Benchmark Workshop on Sandeel (*Ammodytes* spp.) in 2022 (WKSANDEEL)**, chaired by External Chair Nicola Walker, UK and ICES Chair Niels Hintzen, Netherlands, and attended by invited external experts Amy Schueller, US and Pia Schuchert, UK, will be established 14–16 June 2022 for a data evaluation meeting and for a 5-day Benchmark meeting 14–18 November 2022. There will also be an MSE meeting at a venue to be determined on 13–15 December 2022 to:

- a) Evaluate the appropriateness of data and methods to determine stock status and investigate methods for short term outlook taking agreed or proposed management plans into account for the stocks listed in the text table below. The evaluation shall include consideration of:
  - i. Stock identity and migration issues;
  - ii. Life-history data;
  - iii. Fishery-dependent and fishery-independent data;
  - iv. Further inclusion of environmental drivers, multi-species information, and ecosystem impacts for stock dynamics in the assessments and outlook
- b) Agree and document the preferred method for evaluating stock status and (where applicable) short term forecast and update the stock annex as appropriate. Knowledge about environmental drivers, including multispecies interactions, and ecosystem impacts should be integrated in the methodology. If no analytical assessment method can be agreed, then an alternative method (the former method, or following the ICES data-limited stock approach) should be put forward;
- c) Re-examine and update (if necessary) MSY and PA reference points according to ICES guidelines (see Technical document on reference points);

- d) Evaluate assessment performance through the use of MSE, including where possible evaluation on quota flexibility between management areas. A 3-day workshop shall be organised to discuss the results of the MSE.
- e) Develop recommendations for future improving of the assessment methodology and data collection;
- f) As part of the evaluation:
  - i) Conduct a 3 day data compilation workshop (DCWK). Stakeholders are invited to contribute data (including data from non-traditional sources) and to contribute to data preparation and evaluation of data quality. As part of the data compilation workshop consider the quality of data including discard and estimates of misreporting of landings;
  - ii) Following the DC correspondence work, produce working documents to be reviewed during the Benchmark meeting at least 7 days prior to the meeting

| Stocks    |  |
|-----------|--|
| San.sa.1r | Sandeel ( <i>Ammodytes</i> spp.) in Divisions 4.b and 4.c, Sandeel Area 1r (central and southern North Sea, Dogger Bank)                   |
| San.sa.2  | Sandeel ( <i>Ammodytes</i> spp.) in Divisions 4.b and 4.c, and Subdivision 20, Sandeel Area 2r (Skagerrak, central and southern North Sea) |
| San.sa.3r | Sandeel ( <i>Ammodytes</i> spp.) in Divisions 4.a and 4.b, and Subdivision 20, Sandeel Area 3r (Skagerrak, northern and central North Sea) |
| San.sa.4  | Sandeel ( <i>Ammodytes</i> spp.) in divisions 4.a and 4.b, Sandeel Area 4 (northern and central North Sea)                                 |

The Benchmark Workshop will report by 30 May 2023 for the attention of ACOM.

#### **WKAFPA – Workshop on accounting for fishers and other stakeholders’ perceptions of the dynamics of fish stocks in ICES advice**

*Approved on the Resolutions Forum in June 2023*

2022/WK/FRSG33 The **Workshop on accounting for fishers and other stakeholders’ perceptions of the dynamics of fish stocks in ICES advice (WKAFPA)**, chaired by Steven Mackinson (UK) and Niels Hintzen (Netherlands), will be established and meet 10–12 October 2023 in ICES HQ, Copenhagen, Denmark to:

- a. Synthesize the findings of WKRRMAC, WKRRCOD, WKENSURE and other relevant reports on using knowledge of fishers and other stakeholders perceptions of fish and fisheries dynamics in the process of sense-checking ICES assessment and resulting advice on fishing opportunities.
- b. Identify where in ICES assessment and advisory process, the knowledge of perceptions of fish stock dynamics could usefully be applied.
- c. Describe a process for reflection and reasoning on identified similarities and differences in ICES assessments and fishers and other stakeholders perceptions of fish stock dynamics.

- d. Provide the key elements of a mechanism to systematically monitor and collate information from fishers and other stakeholders on fish stock status (and relation to reference points) and trends, and fishing patterns, which may be useful to evidence and understand any similarities and differences in their perceptions compared to ICES assessments.
- e. Suggest key fisheries and stock assessments to test the sense-checking process.

WKAFPA will report by 2 November 2023 for the attention of the Fisheries Resources Steering Group (FRSG), the ICES Advisory Committee (ACOM), and the Annual Meeting between ICES, Advisory Councils and other Observers (MIACO).

## Supporting information

|                          |   |
|--------------------------|---|
| Priority                 | WKAFPA address priority expressed in ACOM Strategic Plan 2019 to 'Improve the mechanism for sharing alternative perceptions of the state of stocks and fisheries' and reiterated in subsequent dedicated focus groups including ACOM (Dec 2021) and MIACO meetings (Nov 2022).  |
| Scientific justification | <p>Term of Reference a)</p> <p>The topic of sense-checking assessments and advice has been prominent in research roadmap workshop WKRRMAC (2019) and WKRRCOD (2019) and has overlap with a series of workshops building on the theme of how to improve professional engagement and involvement of industry (and other third parties) in ICES work. This will review issues addressed in these workshop that are pertinent to WKAFPA.</p> <p>Term of Reference b)</p> <p>Operationalisation of methods and processes for sense-checking assessments and advice through comparison with, or incorporation of relevant information not routinely used in assessment and advice need to be compatible and efficient, finding ways to constructively build on ICES existing processes. The workshop will seek to identify the most appropriate 'contact points' to achieve this.</p> <p>Term of Reference c)</p> <p>To ensure that the integrity and credibility of ICES assessment and advice processes are maintained it will be necessary to define and document a transparent and fair process for reflecting, reasoning and decision making.</p> <p>Term of Reference d) and e)</p> <p>The topic of provision of additional information from third parties for use in ICES assessment and advice process is prominent in recent workshops and is frequently a subject of discussion and debate in ICES. For example: WKRRMAC, WKSCINDI, WKDSG, WKENSURE, WKRRCOD, WKEVUT. The need for more and different kinds of information necessary to provide ecosystem-based advice make this important and timely. Focussing on trying to develop specific examples (re Tor e) the workshop will aim to identify realistic proposals for more systematic and routine input of relevant information from fishers and other stakeholders.</p> |
| Resource requirements    | Appropriate hybrid meeting space at ICES and online. Participants are expected to fund their attendance.  |
| Participants             | Expect 20-30 participants in person and similar online.   |
| Secretariat facilities   | Managing meeting invites and participant list. Rooms - provisional booking made for Biscay (22) and Baltic (17). Sharepoint and online setup. Report formatting and publication.  |

|  |   |
|--|---|
| Financial                              | No financial implications.  |
| Linkages to advisory committees        | ACOM, SCICOM  |
| Linkages to other committees or groups | The workshop is highly relevant to benchmark meetings, oversight group, assessment working groups and advice drafting groups. |
| Linkages to other organizations        | Advisory Councils, DGMARE, SCAR-Fish, EFARO.  |

### **WKSMEEL – Workshop on the development of a spatial database and model for eel**

2022/WK/FRSG34 The Workshop on the development of a Spatial database and Model for Eel 2023 (WKSMEEL), chaired by Cedric Briand, France, will be established and will meet online 19–20 June and in Copenhagen in October 2023 (3 days) to:

- a) Review existing spatial data and analytical methods to derive population indicators, including those used in regional eel management and potential whole stock models. This analysis should highlight the elements needed in a spatial database and its structure, which might vary according to habitat.
- b) Identify requirements and propose a structure for an internationally coordinated eel habitat database that would support the spatial analysis at the scale of eel continental distribution area and habitats (*i.e.* rivers, lakes, estuaries, lagoons and other habitats),
- c) Propose a process for the acquisition and transformation, quality control and validation of relevant data (including presence of dams, dam height, eel abundance data by life stage from electrofishing, counters and traps) for international data standardisation. Examine data availability per country, data access rights and propose a structure for a data call.
- d) Define the requirements for the outputs of the spatial analytical methods to feed a life-stage-based spatial stock-assessment model.
- e) Build a roadmap and explore funding options for the international development / coordination with countries and existing ICES and GFCM databases.

WKSMEEL will report by 01 of December 2023 for the attention of ACOM and SCICOM.

## Supporting information

|  |   |
|--|---|
| Priority                               |   |
| Scientific justification               | <p>The complexity of eel ecology, specifically, the separation of the eel stock into fractions displaying different life-histories according to their geographical distribution and environmental conditions, requires the development of a spatial stock assessment model. This is especially required as there is a need to account for fishing mortality and other spatially differing constraint (habitat loss, hydropower mortality) (WKEFEA, 2021). A stage based surplus model is one of the best candidate models; using models like GEREM for recruitment, and spatial models like EDA for the standing stock and silver eel output (WKEFEA, 2021). The overall spatial model would provide regional trends, mortality and biomass trends, and would allow an aggregation at the international level.</p> <p>This workshop corresponds to Project 1 of the WKFEA roadmap, toward a category 2 advice. It focuses on habitat quantitative assessment, and estimation of mortality linked to hydropower throughout the eel distribution area. The workshop will aim at assessing which WFD data are available and, as a next step, produce a Data Call. From then on, the first task will be to collect the habitat GIS, and to collect all available electrofishing and other sampling data related to eel, and finally to integrate other aspects such as habitat quality.</p> |
| Resource requirements                  | This work will require access to the ICES SharePoint  |
| Participants                           | The participation should reflect the diverse scientific competence needed to fulfil the objectives of the workshop. The workshop is open to WGEEL members and external experts that could bring expertise on hydropower, dams, and GIS habitat/ river network available, or modelling of eel distribution.  |
| Secretariat facilities                 | ICES data call, Secretariat support, Meeting facilities at ICES HQ, Copenhagen and Advisory process and Secretariat support   |
| Financial                              |   |
| Linkages to advisory committees        | To ACOM through the recurring assessment of the eel stock by WGEEL and through the advisory process.  |
| Linkages to other committees or groups | WGEEL, WGDIAD, SCICOM, FRSG, WKEELDATA.   |
| Linkages to other organizations        | The work of this workshop is primarily to support to support EU DGMARE in evaluating the success of the national EMPs through the progress reports. This work also has links to the ICES Scientific Advice which is used by not only EU DC MARE, but also DG ENV, the CITES Secretariat, FAO EIFAAC and GFCM.   |

### WKEVALMAC- Workshop on the evaluation of NEA mackerel stock components

2022/WK/FRSG35 The **Workshop on the evaluation of NEA mackerel stock components** (WKEVALMAC), chaired by Richard Nash\*, UK, and David Secor\*, USA, will be established and meet at NEAFC HQ<sup>12</sup> in London, UK (with online option) 12–16 June 2023 to:

- a) Review information on stock identification of NEA Mackerel and develop a consensus understanding of population structure and key uncertainties, based on the following:

---

<sup>12</sup> North East Atlantic Fisheries Commission, 44 Baker Street, London W1U 7AL, United Kingdom.

- a. Distribution and movements of different life-stages of mackerel, including changes over time, inferred from:
  - i. Mackerel tagging;
  - ii. Scientific surveys;
  - iii. Commercial landings;
  - iv. Dispersal models (e.g. of mackerel eggs and larva/juveniles);
- b. Genetic analyses;
- c. Other approaches not listed above;
- b) Based on the evidence from ToR a, formulate scenarios for mackerel components in the Northeast Atlantic, and assess the evidence-based plausibility of each of these scenarios (including the current definitions of Southern, Western and North Sea);
- c) Provide guidance on the practical implications of each scenario (ToR b) in terms of the availability of data and analytical requirements. Particularly relevant is the availability of historical time-series of catch data. For example, analysis of spatial components with mixing in a single model has different historical data requirements when compared to split stock units. Considerations should include how to deal with changes to mixing and stock structure over time (past and future);
- d) Make recommendations for which mackerel stock scenario(s) to take forward in a future mackerel benchmark, including in what format data should be requested and prepared;
- e) Review and evaluate the basis and potential impacts of management measures targeted at specific areas or components of NEA mackerel (e.g., minimum landing size, closed areas, closed seasons, quota measures) and provide recommendations on how the results could be used in the context of the ICES advice.

WKEVALMAC will report by 18 August 2023 for the attention of ACOM and FRSG.

## **WGRFS – Working Group on Recreational Fisheries Surveys (WGRFS)**

*Was transferred from DSTSG to FRSG in 2023*

2022/2/FRSG36      The **Working Group on Recreational Fisheries Surveys (WGRFS)**, chaired by Kieran Hyder, UK, and Estanis Mugerza, Spain, will work on ToRs and generate deliverables as listed in the table below.

|              | Meeting dates      | Venue            | Reporting details                             | Comments (change in Chair, etc.)                 |
|--------------|--------------------|------------------|---|--|
| Year<br>2023 | 19–23 June<br>2023 | Ancona,<br>Italy | Interim report by 01<br>November 2023 to FRSG |  |
| Year<br>2024 | 10–14 June<br>2024 | TBD              | Interim report by 01<br>November 2024 to FRSG | Estanis Mugerza<br>completes 3 years as<br>chair |
| Year<br>2025 | 14–18 June<br>2025 | TBD              | Final report by 01 November<br>2025 to FRSG   | Kieran Hyder<br>completes 3 years as<br>chair    |

## ToR descriptors

| ToR      | Description  | Background  | <a href="#">Science Plan codes</a>     | Duration  | Expected Deliverables                                       |
|----------|--|---|--|---|---|
| <b>a</b> | Collate and review quality of national estimates of recreational catch and effort, catch-and-release impacts, and socio-economic benefits for candidate stocks, identify significant data gaps in coverage and species, and support the ICES TAF and ecosystem approach. | Most countries are engaged in data collection. This activity collates national participation, catch and socio-economic data sets together, understands the quality of data, and highlights where new data are needed. This is important for supporting the ICES TAF and ecosystem approach. | 2.1, 3.1, 3.2, 5.4                     | Regular activity in each year, with intersessional tasks and workshops to develop new approaches. | Report WG perspectives and publication of scientific papers |
| <b>b</b> | Assess the validity of traditional knowledge, new survey designs, novel methods (e.g. citizen science, apps), innovative statistical methods for data provision, and approaches for selecting appropriate cost-effective methods.  | Recreational data can be collected in many ways, with different associated biases. This supports improvement of analysis of existing surveys and understanding the utility of new methods. This will lead to the most robust and broad evidence-base to underpin assessment and advice.     | 3.1, 3.2, 3.3, 3.6, 4.1, 4.3, 4.4, 5.4 | Regular activity in each year, with intersessional tasks and workshops to develop new approaches. | Report WG perspectives and publication of scientific papers |
| <b>c</b> | Provide guidance to ICES and respond to ad hoc requests from ACOM on the availability of data, design of data collection programs, data storage systems, use of data in assessments, catch allocation, and ecosystem approach.   | Recreational catches are not included in many assessments and data collection is limited to a few species. This activity supports data collection requirements, access to data and methods needed. This will facilitate embedding recreational fisheries into fisheries management.         | 3.1, 3.2, 3.3, 3.5, 3.6, 5.1           | Regular activity in each year, with intersessional tasks and workshops to develop new approaches. | Report WG perspectives and publication of scientific papers |
| <b>d</b> | Develop approaches for regional data collection programmes that generate robust data   | Regionalisation is an important goal, but implementation is unclear This is a challenge for   | 3.1, 3.2, 3.3, 3.6,                    | Regular activity in each year, with intersessional tasks and                                      | Report WG perspectives and publication                      |

| ToR | Description  | Background  | <a href="#">Science Plan codes</a> | Duration  | Expected Deliverables                                       |
|-----|--|---|------------------------------------|---|---|
|     | for end users and support the ICES TAF and ecosystem approach.   | recreational fisheries due to the different actors, gears and survey instruments. This will underpin generation of transparent and robust regional data to support end users needs.   |                                    | workshops to develop new approaches.  | of scientific papers  |
| e   | Evaluate the use of economic (e.g. impact, valuation), social (e.g. governance, behaviour, welfare, health), and communication (e.g. participatory process, messaging) to support the assessment and management of recreational fisheries. | Recreational fisheries have broad benefits and behavioural responses are difficult to predict due to diverse motivations. Hence, understanding of the human dimension is needed. This develops understanding of the data and methods needed for codesign.       | 7.1, 7.4, 7.6                      | Regular activity in each year, with intersessional tasks and workshops to develop new approaches. | Report WG perspectives and publication of scientific papers |
| f   | Review outcomes of the workshops organized by the group.   | Recreational fisheries is a diverse topic, so not all aspects can be addressed at WGRFS. A number of workshops on specific topic have been done or are in the workplan. This reviews outcomes of the workshops and the implications for recreational fisheries. | 5.4, 7.1, 7.4                      | Activity-dependent on workshop  | Report WG perspectives and publication of scientific papers |

### Summary of the work plan

|        |  |
|--------|--|
| Year 1 | <ol style="list-style-type: none"> <li>1) Review progress of intersessional groups (i.e. governance, survey design, quality and analysis, regional coordination, data storage, catch-and-release impacts, novel methods, assessment and catch allocation, human dimensions, and communication) and agree approach for the next year. (a, b, c, d, e)</li> <li>2) Evaluate the quality of up to three national survey programmes using the QAT and provide feedback on tasks requested by ICES. (a, c)</li> <li>3) Review the outputs from ICES WRGRFS led workshops and discuss next steps for the inclusion of outcomes. (f)</li> <li>4) Scope data call for ICES based on the formats developed by WGRFS and the RDBES core group. (c, d, f)</li> <li>5) Assess priorities for inclusion of recreational fisheries in stock assessment using data from the pilot studies. (a, c, d)</li> <li>6) Develop ICES workshop proposal with WGCATCH for intergrating probabilistic and non-probabilistic surveys. (b)</li> </ol> |
|--------|--|



|        |  |
|--------|--|
|        | <ol style="list-style-type: none"> <li>7) Create ICES workshop proposal to evaluate post-release mortality estimates, potential sublethal effects, and reasonable extrapolations across species and fisheries for inclusion in stock assessments. (a)</li> <li>8) Assess the potential for food safety and human health issues from consumption of recreational caught fish (e.g. environmental toxins). (e)</li> <li>9) Review and share methods for engaging with stakeholders and the potential for participatory approaches. (e)</li> <li>10) Draft a roadmap to increase the inclusion of recreational fisheries data into advisory processes</li> </ol>  |
| Year 2 | <ol style="list-style-type: none"> <li>1) Evaluate the outcomes from the intersessional work and agree approach for the next year. (a, b, c, d, e, f)</li> <li>2) Review national programmes including assessment of quality of up to three programmes and provide feedback on tasks requested by ICES. (a)</li> <li>3) Assess the potential of novel survey methods to deliver recreational fisheries data (e.g. citizen science approaches, smartphone apps, traditional knowledge). (b)</li> <li>4) Develop a framework for allocation of catches between sectors based on a review of existing systems and provide best-practice guidance. (c,d)</li> <li>5) Develop MSE approaches to assess the impact of uncertainty in recreational catches on assessment and regional sampling programme. (d).</li> <li>6) Review and share methods for engaging with stakeholders and the potential for participatory approaches. (e)</li> <li>7) Assess outcomes of workshop on inclusion of recreational data in stock assessments. (f)</li> </ol>   |
| Year 3 | <ol style="list-style-type: none"> <li>1) Review progress of intersessional groups (i.e. governance, survey design, quality and analysis, regional coordination, data storage, catch-and-release impacts, novel methods, assessment and catch allocation, human dimensions, and communication) and agree approach for the next year. (a, b, c, d, e)</li> <li>2) Evaluate the quality of up to three national survey programmes using the QAT and provide feedback on tasks requested by ICES. (a, c)</li> <li>3) Review the outputs from ICES WRGRFS led workshops and discuss next steps for the inclusion of outcomes. (f)</li> <li>4) Collate advances in survey methods that could be used to improved national approaches. (b)</li> <li>5) Assess the potential for impact of climate change on species caught by recreational fisheries and how that could impact on DCF and regional species requirements. (c, d)</li> <li>6) Develop ICES workshop proposal on MSE approaches to assess the impact of uncertainty in recreational catches on assessment and regional sampling programmes. (d).</li> <li>7) Assess the potential of novel survey methods to deliver recreational fisheries data (e.g. citizen science approaches, smartphone apps, traditional knowledge). (b)</li> <li>8) Evaluate progress against three year plan and develop new ToRs. (a, b, c, d, e, f)</li> </ol> |

### Supporting information

|                       |  |
|-----------------------|--|
| Priority              | High—the biological, social and economic impact of recreational fisheries is becoming increasing recognised and needs to be included in the fisheries assessment and management processes. |
| Resource requirements | None.  |

|  |  |
|--|--|
| Participants                           | The WG is normally attended by around 60 members and chair-invited experts.  |
| Secretariat facilities                 | Normal backstopping support in the organization of the group.  |
| Financial                              | None.  |
| Linkages to ACOM and groups under ACOM | ACOM, WGBFAS, WGEEL, WGBAST, WGCSE, WGNSSK, WGBIE, WGMEDS, and benchmarks workshops for stocks that have recreational catches.   |
| Linkages to other committees or group  | WGCATCH.   |
| Linkages to other organizations        | <ul style="list-style-type: none"> <li>• EC, STECF, Regional Coordination Groups, Advisory Councils.</li> <li>• WECAFC/OSPESCA/CRFM/CFMC/MEDAC Working Group on Recreational Fisheries.</li> <li>• Many linkages to (inter)national angling associations, since WGRFS members estimate national marine recreational catches.</li> <li>• Links to broader organizations with interests in angling and fisheries management including EIFACC and FAO.</li> </ul> |

## WKREBUILD2 – Workshop on guidelines and methods for the design and evaluation of rebuilding plans for category 1–2 stocks

2022/2/FRSG37 A Workshop on guidelines and methods for the design and evaluation of rebuilding plans for category 1-2 stocks (WKREBUILD2), chaired by Martin Pastoors (Netherlands) and Dorleta Garcia (Spain) will meet in ICES HQ, Copenhagen, Denmark 6–10 November 2023 to:

- Define a framework for scientific advice for developing rebuilding plan elements as part of overall management strategies, that could be widely applied to ICES stocks.
- Develop guidelines for the evaluation of rebuilding plan elements that consider the precautionary approach, the species life history (incl. longevity), changes in productivity and rebuilding potential.
- Propose the performance indicators and thresholds to be used for the acceptability of rebuilding plan elements including rebuilding target, probability of rebuilding and rebuilding time relative to rebuilding time in the absence of fishing.
- Test the rebuilding plan evaluation guidelines on a limited number of test cases using a newly developed and dedicated evaluation tool
- Identify any additional requirements for a evaluation tool that would allow the evaluation of rebuilding plans elements proposed in ToR (a) in the context of assessment working groups.

WKREBUILD will report by 1 December 2023 for the attention of FRSG and ACOM.

### Supporting Information

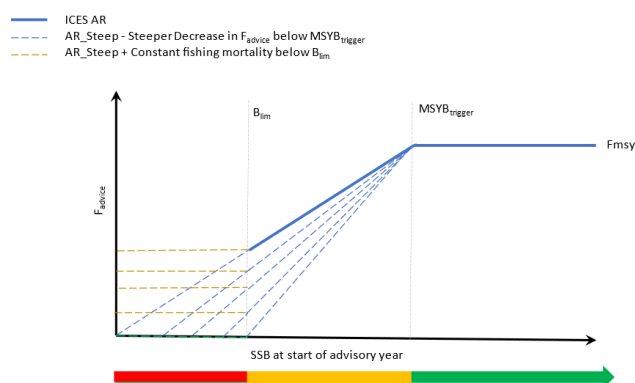
|          |  |
|----------|--|
| Priority | <p>High.</p> <p>ICES regularly recommends rebuilding plans in combination with zero TACs for the next year, This occurs when stocks are estimated to be below <math>B_{lim}</math> and there is no perceived possibility of rebuilding above <math>B_{lim}</math> within the timeframe of a short-term forecast. Furthermore, the performance of ICES category 1 advice rule below <math>B_{trigger}</math> and especially below <math>B_{lim}</math> has been questioned.</p> <p>WKREBUILD2 should build on the findings of the first workshop on guidelines and methods for the evaluation of rebuilding plans</p> |
|----------|--|

(WKREBUILD) and taking into account the general guidelines on management strategy evaluations (e.g. WKG MSE3). In 2020, WKREBUILD analyzed guidelines and methods for the evaluation of rebuilding plans. The workshop generated a guidance table summarizing the best practices for evaluation of rebuilding plans against the potential criteria of acceptability. However, it did not propose specific rebuilding plans of harvest control rules. Instead, the workshop recommended that a follow-up workshop (WKREBUILD2) be organized for testing the guidelines with actual test cases, with the aim of defining more specific criteria and guidelines.

A simulation tool is being developed and will be ready to be used during WKREBUILD2.

The framework proposed for rebuilding plans should be transferable between the current and proposed new advice frameworks. In terms of the definition of rebuilding plans, independently of specific values, the main difference between the current and the new advice framework is  $B_{safe}$ .

The current ICES advice rule specifies the recommended management action when the stock is estimated to be above  $B_{lim}$ . When the stock is estimated to be below  $B_{lim}$  and unable to recover to  $B_{lim}$  within the period of the short term forecast, ICES recommends a zero catch and the development of a rebuilding plan.



WKREBUILD2 should explore how rebuilding plan elements could be included into the ICES advice rule. This can be done through specific (and different) actions when the stock is between  $B_{lim}$  and  $MSY B_{trigger}$  and when the stock is below  $B_{lim}$ . This should involve different shapes of HCRs that take into account recommended management actions at different biomass levels and under different conditions (uncertainty in the assessment, distance between reference points, lifespan of the species, role of the stock in the fishery (target/bycatch) etc.)

The rebuilding plan elements should be aimed at restoring the stock biomass above  $B_{lim}$  and ensuring a non-decreasing trend in stock biomass between  $B_{lim}$  and  $B_{trigger}$ . As the plan will need to be evaluated in a short time frame for specific cases, developing a standardized tool is required. It could be similar to eqSim but with initial population equal to the last population estimate and focused on assessing impacts in the short to medium term. The tool should report on the rebuilding probability metrics in absolute terms and in comparison with zero fishing mortality scenario.

|                          |  |
|--------------------------|--|
| Scientific justification | ICES is regularly recommending the development of rebuilding plans so guidance on how to evaluate these plans is required.                 |
| Resource requirements    | One meeting room at ICES HQ with at least one breakout room.   |
| Participants             | Scientists with experience and interest in rebuilding plans and tools for short-term evaluations of potential effects of rebuilding plans. |

|  |  |
|--|--|
| 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 advisory process. |
| Linkages to other committees or groups | HAWG, WKG MSE2, WGBIE, WGWIDE, WGBFAS, WGCSE, WGNSSK, NWWG, AFWG, WGHANSA    |
| Linkages to other organizations        |  |

## WKING2 - Workshop 2 on innovative fishing gear

2022WK/FRSG38 **Workshop 2 on innovative fishing gear** (WKING2), in response to the EU DG-MARE request for ICES advice on the progress and impact that has been made in innovative gear use within EU waters, chaired by Antonello Sala, Italy, and Julia Calderwood, Ireland, will be established and meet online 23–25 August 2023 to:

- d) Evaluate/endorse the catalogue of gears considered ‘innovative’, including their objectives, technical specificities, and known impacts/benefits (in terms of selectivity and catch efficiency on target and non-target species and environmental impact in terms of benefits for, or negative effects on, marine ecosystems and sensitive habitats);
- e) For innovations ready for deployment, assess the level of uptake of innovative gears by the EU industry (per sea basin and fishery). Investigate what aspects impact the uptake of innovative gears. Depending on data and knowledge availability, assess the impact of finance, user-friendliness, health, and safety. For those innovations which are already taken up, present the results for the fleets;
- f) For those innovations not implemented, discuss the main drivers that prevented their use if known. Where possible, include analysis of the socio-economic trade-offs and propose ways to facilitate their implementation;
- g) Produce a report detailing the process taken and presenting the results;
- h) Draft a summary advice based on the report produced.

A Core Group of members from the ICES Working Group on Fishing Technology and Fish Behaviour (WGFTFB) will work by correspondence to address ToR (a). The Core Group, with input from other experts in the ICES community, will facilitate information collection and discuss the Innovative Gears conceptualization. The Core Group will also collect information on the types of innovative gear that have been used in EU fisheries in recent years.

At the WKING2 meeting, the Core Group will present results for review and deliberate the findings to date. ToRs (b) and (c) will be addressed here. Following this, a report and associated advice will be drafted.

This workshop will be followed up by a meeting between experts and ACOM Leadership.

WKING2 will report by 15 September 2023 for the attention of FRSG, ACOM, and SCICOM.

## Supporting information

|   |   |
|---|---|
| Priority                                    | High, in response to a specific request from the EU Commission to ICES to prepare the report described in Art. 31.1 of the EC Regulation 2019/1241.   |
| Scientific justification                    | The EU Commission seeks ICES advice on the progress that has been made, or the impact arising from innovative gear within EU waters. This advice should provide the scientific knowledge basis to assess the benefits for, or negative effects on, marine ecosystems, sensitive habitats and selectivity. The following EU projects should be considered: <ul style="list-style-type: none"> <li>• Discardless (<a href="http://www.discardless.eu/">http://www.discardless.eu/</a>);</li> <li>• Minouw (<a href="http://minouw-project.eu/">http://minouw-project.eu/</a>);</li> <li>• SmartFishh2020 (<a href="https://smartfishh2020.eu/">https://smartfishh2020.eu/</a>); and</li> <li>• Gearing Up (<a href="https://gearingup.eu/">https://gearingup.eu/</a>).</li> </ul> STECF plenary meeting and EWG reports will also be consulted. |
| Resource requirements                       | ICES Secretariat support with meeting logistics and advisory process.   |
| Participants                                | The Core Group is expected to comprise 2 members. Other members of WGFTFB will be consulted. Where relevant, stakeholder (NGO, fishing industry, gear industry) input will be sought during the process. Stakeholders will be invited to the final workshop. DG MARE will also be consulted for feedback on the initial suite of criteria. The requestors should be also engaged in the process through online meetings towards the end of the scoping and final meetings to ensure the product is fit for purpose.   |
| Secretariat facilities                      | None.   |
| Financial                                   | Covered by DG MARE special request to ICES.   |
| Linkages to advisory and science committees | ACOM, SCICOM.   |
| Linkages to other groups                    | EOSG, FRSG, HAPISG, WGFTFB.   |
| Linkages to other organizations             | GFCM, EU DG-MARE, STECF.  |

## WKRRBWC – Workshop on a Research Roadmap for Bristol and Western Channel Herring

2022WK/FRSG39 A **Workshop on a Research Roadmap for Bristol and Western Channel Herring** [WKRRBWCH] will be established (Aaron Brazier, UK and Afra Egan, Ireland) and will meet at the University of Swansea, from 4<sup>th</sup> – 6<sup>th</sup> December 2023 to:

- Identify methods and data available for the identification of herring stock structure in the western English Channel (Division 7e), Bristol Channel (Division 7f), and adjacent waters.
- Identify potential and existing data sets (including environmental parameters) for the assessment and management advice for herring occurring in Divisions 7 e and f.
- Produce a roadmap for the delivery of future research needs for the scientific advice that underpins management of herring in the western English Channel and Bristol Channel, either together or independently.

WKRRBWCH will report by date (9 February 2024) for the attention of ACOM and HAWG.

## Supporting information

Currently, ICES does not recognise herring (*Clupea harengus*) occurring in the western English Channel (ICES Division 7e) and Bristol Channel (ICES Division 7f) as a single stock, nor provide advice for these combined Divisions. However, there are three herring stocks in adjacent waters: herring in 3a, 4, and 7d (North Sea; Category 1 SAM assessment), 7aN (Irish Sea; Category 1 SAM assessment), and 7aS, 7g–j (Celtic Sea; Category 1 ASAP assessment). The Herring Assessment Working Group (HAWG) lists herring in ICES Division 7e–f as a stock with limited data (not to be confused with a data limited stock) with catch records reported since 1974. The stock structure is uncertain in these two Divisions. Catch data are collated for each Division from either targeted fisheries or as bycatch. Additionally, there are a number of surveys (both acoustic and bottom trawl) where herring are recorded and in some cases the abundance is estimated.

Herring is subject to small-scale targeted fisheries in Divisions 7e–f in the Bristol Channel along the south Wales and north Devon coasts. In the past there were fisheries in the western English Channel. The latest catch records of herring in 7e since 2000 have varied between 12 and 1010t with catches from 7f fluctuating between 1 and 231t over the same time period. Preliminary landings (2022) were 6 and 200 tonnes for Divisions 7e and 7f respectively (HAWG, 2023 *in prep*).

At present, there is insufficient understanding, information, and data on the herring population structure in the western English Channel and Bristol Channel to be able to provide robust advice or on any potential changes in productivity in the short to medium term. Herring are a key forage fish in adjacent ecosystems, forming an important trophic level in the food chain for key predatory species.

### Details/overview

---

**Priority:**

The identification of stock boundaries and the logical definition of management units is vitally important for the sustainable exploitation of fish stocks. In addition, the acquisition of appropriate data on which herring occur in the Bristol Channel and western English Channel is necessary for providing scientific advice in selected areas where fisheries are occurring.

A workshop is needed to collate all available information on herring in the Bristol Channel (ICES Division 7f) and western English Channel (ICES Division 7e) to identify knowledge gaps and provide a roadmap on research necessary to be able to provide robust advice to management.

---

**Scientific justification and relation to action plan:**

The aim for the workshop is to collate all available information on herring in the Bristol Channel (ICES Division 7f) and western English Channel (ICES Division 7e) with a view to determine stock structure (boundaries), data on biological characteristic and abundance, the ecological role of herring in this ecosystem, where data are missing, and a roadmap for research to underpin the advice and management of the herring in this area.

---

|  |   |
|--|---|
| <b>Resource requirements:</b>                  | No specific resource requirements beyond the need for members to prepare for and participate in preparatory and final meetings.   |
| <b>Participants:</b>                           | In view of its relevance to the EU Data Collection Framework (DCF) and the UK, the Workshop is expected to attract interest from ICES Member States.  |
| <b>Secretariat facilities:</b>                 | None.   |
| <b>Financial:</b>                              | Some additional funding will be required for attendance of personnel at the final workshop. Attendance at other meetings at the use of Microsoft Teams (or equivalent) will be used for the preparatory work to minimise any financial requests. Potential expertise by invitation? |
| <b>Linkages to advisory committees:</b>        | ACOM.   |
| <b>Linkages to other committees or groups:</b> | ACOM, HAWG.   |
| <b>Linkages to other organisations:</b>        |   |