

Data Science and Technology Steering Group EG Resolutions

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Draft Resolutions for approval in 2024

WGJCDP – Working Group on the Joint Cetacean Data Programme

2024/MT/DSTSG01 The Working Group on the Joint Cetacean Data Programme (WGJCDP), chaired by Nikki Taylor, UK (2025–2027), will work on ToR and generate deliverables as listed in the Table below. For more information on JCDP: <https://jncc.gov.uk/our-work/joint-cetacean-data-programme/>

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2025	25–26 March 2025 ¹ , online	E-evaluation and interim report by June 2025 to DSTSG	Interim report by Date Month May to SSGXXX	
Year 2026	00–00 February or March 2026, online	E-evaluation and interim report by June 2026 to DSTSG	Final report by Date Month May to SSGXXX	
Year 2027	00–00 February or March 2027, online	E-evaluation and final report by June 2027 to DSTSG, ACOM, SCICOM		

¹ TBC.

ToR descriptors

ToR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	WGJCDP to maintain and explore development opportunities for the JCDP to ensure the programme remains current and meets the objectives .	<p>The WGJCDP will evaluate the JCDP against the objectives and identify key opportunities to enhance delivery against them to ensure the programme can deliver evidence needs for research, status assessment and reporting e.g. OSPAR and MSFD.</p> <p>The Group will also look to review the WG membership with a view to ensuring diversity in members to ensure broad and representative input, as well as reviewing the platform for accessibility in support of creating inclusive access under the FAIR principles.</p>	3.2; 3.5	3 years	<p>i. Collation of opportunities to enhance the impact of the JCDP for prioritization, engagement and possible implementation; WGJCDP5 2026 annual meeting.</p> <p>ii. Accessibility review of the platform to identify recommendations for improvement; December 2024.</p>
b	Review the JCDP metadata to ensure it allows users to apply the data appropriately for high-quality science outputs.	<p>The Group will conduct a review of current metadata to highlight how the process can be improved to allow users to handle data appropriately in analyses and ensure high quality outputs. This is a key risk regarding collation of data from varying sources and of differing protocols, therefore, considering how to maximize metadata to describe the data and how to use them is important in supporting the JCDP concept.</p>	3.5	2 years	<p>i. Metadata review and recommendations; WGJCDP4 2025 annual meeting.</p>

c	Identify proactive methods of promotion of the JCDP and data standard to continue to increase engagement.	<p>The JCDP data standard has been developed to improve the standard of data across all data collectors and allow streamlined collation into the JCDP for wider application. Continued engagement in the application of the standard is essential to the success of the JCDP.</p> <p>The Group will proactively maintain dataflow in and out of the JCDP, and ensure the supporting information in the ICES portal and web hub remains current and supports the JCDP objectives.</p> <p>Further to the standard, the Group will develop published guidance highlighting key validation questions as a resource for data owners/custodians to apply to further improve data quality.</p>	3.2; 3.5; 3.6	3 years	<p>i. Updated comms plan; August 2024.</p> <p>ii. Web hub content updates (annual review and updates); WGJCDP annual meeting.</p> <p>iii. Development of a published cetacean data validation guidance resource in support of standardizing validation more widely across data collectors; December 2024.</p>
d	Work with data users to further develop the JCDP to provide the data for reporting and assessment needs where required.	Continue engagement with relevant groups e.g. OSPAR, WGMME and ASCOBANS to ensure the JCDP becomes the primary resource for cetacean abundance and distribution data, underpinning evidence needs for assessment and reporting.	4.2; 6.1; 6.4	3 years	<p>i. Collated overview of existing and planned integration of the JCDP into existing fora; WGJCDP6 2026.</p> <p>ii. Engage with relevant working and expert groups on potential uses for the JCDP; e.g. WGMME, WGBYC, WKCETAB, OSPAR.</p>

e	Review the use of the JCDP datasets and ensure an effective QA process and feedback mechanism for data users to highlight errors and issues to be addressed.	The JCDP aims to be a source of high-quality evidence, either developed by the WGJCDP or by other users. A watching brief of data uses and promotion of good examples will support the reputation of the JCDP and assist with growth into a globally renowned resource. A feedback mechanism to highlight improvements, issues and errors, will support a high-quality evidence base.	3.5	3 years	Annual review of the use of the JDCP dataset; WGJCDP annual meeting. ii. Feedback mechanisms review and recommendations; WGJCDP4 2025. iii. Review of the automated quality assurance process of the JCDP, and implement recommended changes where necessary.
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Summary of the work plan

Year 1	<ul style="list-style-type: none"> Adoption of the WGJCDP ToR 2024–2026 by the WG. Accessibility review of the platform to identify key recommendations. Update the JCDP WG comms plan. Review of the existing metadata to identify recommendations. Review feedback mechanisms for data quality assurance and allow submission of proposed system improvements and issues, to identify recommendations. Draft validation guidance document.
Year 2	<ul style="list-style-type: none"> Review of recommendations for year one and prioritize for implementation: metadata provision; accessibility; and feedback mechanisms. Implementation of comms plan. Review and collate opportunities for development of the JCDP platform to fulfil the evidence. provision needs for assessment and reporting.
Year 3	<ul style="list-style-type: none"> Critical review of the progress against project objectives and ToR. Finalize implementation of priority recommendations from reviews of metadata; accessibility and feedback mechanisms. Agree on the development plan for the JCDP platform based on the collated opportunities.

Supporting information

Priority	The activities of this Group will further develop the JCDP as the go-to resource for cetacean evidence needs. The Group will continue to champion standardization and mobilization of data in support of innovative analyses to underpin high-priority assessment and reporting needs across the Northeast Atlantic region and beyond.
Resource requirements	The Group will require some support from the ICES secretariat in facilitating meetings and communication and in conducting an accessibility review of the platform.
Participants	The Group will likely be attended by approximately 20–25 members and guests.
Secretariat facilities	Provision and support of communication services such as Webex/Teams as required; admin support in facilitation and collating notes and actions from meetings.

Financial	No financial implications.
Linkages to SCICOM and groups under SCICOM	SCICOM is the parent committee and this Group will communicate with SCICOM as required, where opportunities to support SCICOM requests are apparent.
Linkages to other committees or groups	There will be a very close working relationship with WGMME, and to a lesser degree, WGBYC where relevant as well as other data-based WGs.
Linkages to other organizations	Given the data holdings, it is expected there will be close links with other organizations such as OSPAR; European country reporting bodies; NAMMCO, ACCOBAMS, and ASCOBANS in terms of data provision and development of the JCDP platform to suit the need.

WGSMART – Working Group on SmartDots Governance

2024/MT/DSTSG02 The **Working Group on SmartDots Governance** (WGSMART), chaired by TBD (2025–2027), and Côme Denechaud, Norway (2024–2026), will meet intersessionally, four times per year via online meetings and in-person once a year, to work on ToRs and generate deliverables as listed in the Table below. For more information on SmartDots: <http://ices.dk/marine-data/tools/Pages/smartdots.aspx>

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2025	1) 06 February 2) 22 April (optional) 3) 27 September 4) 27 November (optional)	21–22 October 2025, Copenhagen	E-evaluation by December 2025 to DSTSG	
Year 2026	1) 05 February 2) 21 April (optional) 3) 03 September 4) 26 November (optional)	20–21 October 2026, Copenhagen	E-evaluation by December 2026 to DSTSG	
Year 2027	1) 04 February 2) 20 April (optional) 3) 02 September 4) 25 November (optional)	19–20 October 2027, Copenhagen	E-evaluation and final report by December 2027 to DSTSG, ACOM, SCICOM	

WGSMART will report on its activities by the March SCICOM meeting the following year to DSTSG and DIG.

ToR descriptors

TOR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Elaborate a forward plan for the sustainability of SmartDots as a platform.	A sustainable input of resources and funding is needed to maintain high quality standards and to be able to add essential new modules and developments in line with the needs of the ICES community, related to quality assurance and efficiency for the determination of biological parameters. A workplan with clear objectives and milestones can only be successfully implemented when the availability of such resources is clear.	4.4, 3.6	3 years/ Generic ToR	<ul style="list-style-type: none"> - A workplan outlining what resources are required for development, support, training and dissemination of relevant information. - An estimated budget including identified funding resources. - Actual resources for the sustainability of SmartDots on the long term. - Coordination of proposals to external funding sources.
b	Evaluate, review and prioritize user feedback and requests related to maintenance, bug fixing and training in SmartDots.	SmartDots is an operational tool that aims to improve the overall quality of biological data delivered to assessment EG's. The tool is an integral part of the ICES QAQC for determination of biological parameters for which ICES provides advice, a procedure largely under the guidance of WGBIOP. Evaluation and prioritisation of feedback and requests will be an ongoing task, as well as updating the training material.	3.1, 4.1	3 years/ Generic ToR	<ul style="list-style-type: none"> -A prioritised list of SmartDots related expert group feedback with a proposed annual work plan to address issues and implement maintenance and improvements to SmartDots. -Annually updated training material in line with the implemented changes.

c	Oversee the implementation of new development requests addressed to WGSMART and the development of user guidance and training related to these new developments.	<p>Developments of new SmartDots modules and features within the existing SmartDots modules are essential for the ICES community. New developments are based on user requirements and feedback. WGSMART will implement these developments in line with recognised quality assurance procedures.</p> <p>As SmartDots develops overtime a range of users will require various levels of training including step by step user manuals, tutorials and possibly workshops. This ToR is largely dependent of ToR a. If no resources are available, WGSMART will only be able to handle ToR b.</p>	3.1, 4.1	3 years/Generic ToR	<p>-Development of additional software modules with features designed in accordance with recognised quality assurance procedures.</p> <p>- Development of additional features in the existing modules</p> <p>- Development of training documentation.</p>
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Summary of the Work Plan

Year 1	All ToRs will be addressed in quarterly online meetings and the yearly physical meeting. If no additional resources are available, WGSMART will meet online every 6 months.
Year 2	All ToRs will be addressed in quarterly online meetings and the yearly physical meeting. If no additional resources are available, WGSMART will only meet online every 6 months.
Year 3	All ToRs will be addressed in quarterly online meetings and the yearly physical meeting. If no additional resources are available, WGSMART will only meet online every 6 months.
<p>In addition to the ongoing maintenance and improvements by the end of year three WGSMART aims to have; maturity and ichthyoplankton modules available in the software with user interfaces that match the age reading module but with module specific features, the corresponding data output and reporting modules fully operational, user manuals updated in line with all developments made</p>	

Supporting information

Priority	
Resource requirements	<p>A commitment of time from the members of the group consistent with progressing actions identified in the quarterly meetings.</p> <p>Sustainable source of funding for new developments following user requests.</p>
Participants	<p>People interested and/or involved in the estimation, calibration and quality assessment of biological parameters such as age and maturity, ideally one from each member country. A chair of WGBIOP needs to be an active member, as well as one member from each country from the core development group (BE, DK, NO). ICES Secretariat as hosts of International SmartDots, other WGBIOP and WGALES members as need be.</p>
Secretariat facilities	<p>Community Sharepoint site, Remote meeting facilities, Web application developments</p>
Financial	<p>Resources needed for new developments</p>

Linkages to advisory and science committees	This is an integral component to the overall Quality Assurance framework (of Advice) that ACOM together with the Coordination group are describing
Linkages to other groups	There is a very close working relationship with WGBIOP and WGALES. There is a strong linkage to DIG as the main umbrella for data/software governance structures. Liaison with WGQUALITY in charge of the quality of assessments.
Linkages to other organizations	EU Commission has partially funded SmartDots and is therefore following its progress, GFCM in the Mediterranean also has interest in this system.

WGTFID – Working Group on Technology Integration for Fishery-Dependent Data

2024/MT/DSTSG03 The **Working Group on Technology Integration for Fishery-Dependent Data** (WGTFID), chaired by Holly McBride, US (2025–2027), and Helen Holah, UK (2025–2027), will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2025	1) 00–00 month 2025, [VENUE]	28 April–2 May 2025, Sarasota, Florida	E-evaluation by month 2025 to DSTSG	
	2) 00–00 month 2025, [VENUE]			
Year 2026	1) 00–00 month 2026, [VENUE]	00–00 Spring 2026, [VENUE]	E-evaluation by month 2026 to DSTSG	
	2) 00–00 month 2026, [VENUE]			
Year 2027	1) 00–00 month 2027, [VENUE]	00–00 Spring 2027, [VENUE]	E-evaluation and final report by month 2027 to DSTSG, ACOM, SCICOM	
	2) 00–00 month 2027, [VENUE]			

ToR descriptors

TOR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Establish an active public-facing, query-able inventory of applications of Electronic Monitoring for reporting and monitoring fisheries, and maintain a defined vocabulary across electronic technologies (ET).	This ToR will serve as a repository to continually document existing EM programs by region, gear type and objectives, to centrally capture what data are being collected and by whom. Alongside this the glossary of ET terms developed in 2019 will be extended as the use of ETs becomes more multidisciplinary.	4.1, 4.5	Ongoing	Web hosted inventory of implementation of EM in national reporting and monitoring programmes. List of updated terms.

b	Publish and periodically review ices user handbook products authored by the group including those on drafting statements of work for EM programmes, and the standardized data format for processed EM data.	This TOR supports the publication, review and updating of ICES handbooks first in respect to considerations for governments and associated monitoring programmes providing appropriate levels of specificity and clarity in their soliciting private companies for products and services. Second in respect to the EM data model format that aligns data collected from EM systems with the ICES data framework.	3.1, 4.2, 5.1	Year 1, 3	Initial publication of two handbooks (Year 1) and revised versions reflecting the group's year 1-3 output, external testing feedback of the EM data model, and work in linked ICES groups (Year 3).
c	Evaluate risks/benefits of ETs across different fisheries and provide specific guidance on developing monitoring tools for specific types of fisheries (e.g. small-scale, midwater trawl, bottom trawl)	New electronic monitoring (EM) programs are being considered in the EU and US across a variety of fishery types. This TOR will examine the current data collection and monitoring approach in specific fisheries (e.g. North Sea pelagic trawl), and utilizing the experience of WGTIFD members, provide guidance of how to develop an EM program.	3.1 3.5, 4.4	Ongoing	Guidelines and best practices on developing monitoring tools for specific types of fisheries

d ²	Provide recommendations on how to utilize EM for monitoring bycatch of protected, endangered and threatened species (PET) in different fisheries	Most stock assessments for protected and endangered species remain poor due to the limited availability of information. This has started to impact seafood import/export, by requiring countries to better document their fishery impacts on PET bycatch. It is expensive to deploy observers for rare events, and it remains challenging to use EM for monitoring PET bycatch in some fisheries. This TOR would examine the data gaps for assessing bycatch and provide recommendations for implementing EM to collect and analyse data for PET bycatch monitoring	3.1, 3.2, 6.2	Ongoing	Best practices and recommendations for designing a data collection program using EM for protected and endangered species
e	Develop and publish recommendations for interoperability of EM systems, including raw imagery and sensor data, and other appropriate guidance such as associated metadata for ensuring that EM systems and programs can integrate across governance, fisheries, EM systems, and AI algorithms.	Raw file types and data collected from EM systems are diverse, making it difficult for programs to utilize multiple EM providers or for governance to exchange information. This TOR will improve the interoperability of information collected from EM systems and include coordination with EM service providers. This will include the standardization of still image metadata for the use of AI algorithms.	3.1, 4.1	Ongoing	Standardized interchange format and exchange process of raw information collected from EM systems and still images collected for the use in AI libraries.

² WGTIFD noted ToR d may still be subject to change.

f	Provide guidance and best practices on developing data sharing agreement and data governance plans that support the development of AI/ML applications for different types of EM programmes	The use of AI/ML applications in EM programmes has been slow given the limitations of centralizing imagery and other training data, largely due to legal reasons. Location and imagery data is considered 'personal' or 'business information' by governments, making it particularly challenging to share across jurisdictions, and manage issues of privacy, transparency laws (e.g. freedom of information requests), and managing fishers' concerns that release of imagery into the public domain will have negative consequences for the industry's public image. Such challenges represent barriers to establishing image libraries to support the development of AI / ML applications.	3.1	Year 2	Systematic review of existing data sharing agreements and data governance policies to identify best practice.
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Summary of the Work Plan

Year 1	<ul style="list-style-type: none"> Produce an annual overview of the working group's progress.
Year 2	<ul style="list-style-type: none"> Produce an annual overview of the working group's progress.
Year 3	<ul style="list-style-type: none"> Produce a final report on the working group's progress and completed TORs.

The completion of our TORs will be dependent on the mode of our meetings, in-person, virtual, or hybrid. Because TIFD has become such a large group, spread across 10 or more time zones, there are certain TORs more suitable for dedicated in-person meetings vs. others more appropriate to virtual meetings. We would develop intersessional meetings as needed to focus on specific TORs, to supplement progress made in the annual meetings.

Supporting information

Priority	Fisheries stakeholders, managers, and scientists are looking to improve the timeliness, quality, cost-effectiveness, and accessibility of fishery-dependent data by integrating technology into fishery reporting and monitoring programs. Remote electronic monitoring (REM), electronic reporting (ER), and other data collection tools have clear potential to meet these challenges. We believe that ICES can provide a forum for sharing and agreeing best practice in developing the use of such tools for specific fisheries and / or monitoring objectives, promoting their uptake and impact, and standardizing how data are collected and used for fisheries management and science.
Resource requirements	Each participant of the working group is expected to provide their own travel resources, however, with the expectation of needing to host hybrid meetings (virtual and in-person ICES may need to provide some resources to allow for remote participants.

Participants	The development and implementation of electronic technologies is a growing area of interest, with programs in every Region in the United States and the EU. The working groups will be attended by up to 35 experts.
Secretariat facilities	SharePoint facilities and secretariat support with report formatting.
Financial	No financial implications.
Linkages to advisory and science committees	Data Science and Technology Steering Group
Linkages to other groups	WGMLEARN, WGCATCH, WGBYC, WGFASST, PGDATA WGSFD, WKSEATEC, WKDSG, ICES Data Centre, DIG
Linkages to other organizations	

WKTNET – Workshop on Transparent Assessment Framework (TAF) National Estimation Templates

2024/WK/DSTSG04 The **Workshop on Transparent Assessment Framework (TAF) National Estimation Templates (WKTNET)**, chaired Ana Ribeiro Santos, UK and Colin Millar, ICES Secretariat, will meet at ICES HQ, Copenhagen, Denmark 27–31 January 2025 to:

- a) Provide training on the structure of a TAF analysis with a specific focus on RDBES;
- b) Consider existing structure templates (WKRDBES-RaiseTAF; WKNatEst) for national estimation of fishery-dependent data from the RDBES;
- c) Compile current work practices, and identify main use cases, highlighting where modifications of the current TAF workflow may be required;
- d) Develop a general approach for developing a TAF national estimation template for use by ICES experts;
- e) Provide, as complete and tested as possible, templates for the main use cases identified in c).

WKTNET will report by **TBD** February 2025 for the attention of ACOM, SCICOM, and DSTSG.

Supporting information

Priority	<p>A core part of the RDBES system is to provide raised estimates of national fishery statistics produced using robust and well-written code in the TAF structure. Providing robust and timely estimates requires national estimators to be trained in the use of TAF, in order to provide , it is well-written and tested code, with consistent implementation o methods, that are easy for the national estimator to use.</p> <p>This workshop is considered to have a high priority to support the development of the RDBES, and support the preparedness of national institutes to make the transition towards using the RDBES format for national estimates. This workshop will complement other estimation workshops: WKRDBESRaise&TAF 1and2 and WKRDBES_RaiseStock 1–3 and will bring national institutes and national data providers up to speed on the use of RDBES format for calculating national estimates.</p>
Scientific justification	<p>Term of Reference a)</p> <p>Before engaging in the design of a workflow for national estimation, it is important that all meeting attendees have a basic and sound understanding of the Transparent Assessment Framework (TAF) workflow structure and the capabilities, limitations and scope for modification. A full day or more of the meeting will be devoted to training in TAF.</p>

Term of Reference b)

Recent workshops on RDBES raising methods have developed templates for use by national estimators, and these were used by WKNatEst, but were found not to be generally applicable. Understanding where currently available templates are lacking is important for Terms of Reference d).

Term of Reference c)

There is a range of different approaches used to provide national estimates, differences are generally most pronounced between institutes. It is important to collate the different approaches used, and the reasons for them, such as, timing of data calls, range of stocks and areas covered. Consideration of the difficulties of implementing these approaches into the TAF structure should be documented.

Term of Reference d)

Devise one or more general approaches for writing RDBES national raising calculations in the TAF structure. The fewer the number of approaches the better to increase the homogeneity across national estimation code and improve consistency and ease of review.

Term of Reference e)

Apply the general approaches to create templates for the main use cases identified in c) and test them on the TAF server.

Resource requirements	ICES secretariat support, meeting facilities at ICES HQ, Copenhagen.
Participants	The workshop requires attendance by RDBES national estimators, including those with expertise with R and TAF.
Secretariat facilities	Secretariat support, web conference, and meeting room.
Financial	No financial implications.
Linkages to advisory and science committees	ACOM.
Linkages to other groups	WGRDBESGOV, DSTSG.
Linkages to other organizations	None.

Resolutions approved in 2023

WGELFADG – Working Group on Egg and Larvae and Fecundity and Atresia Database Governance

2023/MT/DSTSG01 The Working Group on Egg and Larvae and Fecundity and Atresia Database Governance (WGELFADG), chaired by Hannah Holah, UK (2024–2026) will work on ToRs and generate deliverables as listed in the Table below.

	ONLINE MEETING DATES	PHYSICAL MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2024	1) Q1 2024: 15 Feb. 2) Q2 2024: 7 May 3) Q3 2024: 00 Sept. 4) Q4 2024: 00 Nov.	00–00 November 2024, [VENUE]	E-evaluation by end 2024 to DSTSG	
Year 2025	1) Q1 2024: 00 month 2) Q2 2024: 00 month 3) Q3 2024: 00 month 4) Q4 2024: 00 month	00–00 November 2025, [VENUE]	E-evaluation by end 2025 to DSTSG	
Year 2026	1) Q1 2024: 00 month 2) Q2 2024: 00 month 3) Q3 2024: 00 month 4) Q4 2024: 00 month	00–00 November 2026, [VENUE]	E-evaluation and final report by end 2026 to DSTSG, WGALES, DIG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Advise on recommendations and requests from expert groups (submitters and end-users) related to Egg and Larvae database.	Centralized discussion on recommendations and requests is crucial to prevent redundancy and stimulate alignment over data submission and data products.	3.2, 4.1, 4.2	All years	Create Github for reporting on issues. Formal responses in the recommendations database, and more in detail directly to the requesting group(s). Progress technical issues at GitHub (to be created), final reporting of considerations in WGELFADG report.
b	Develop and implement the Fecundity and Atresia database.	Finalize the format and release database on ICES data portal.	3.2, 4.1, 4.2	Year 1 finalize database format, year 2 testing database, year 3 database open for upload and download.	Database for storage of fecundity and atresia data collected.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
c	Make information on Egg and Larvae and Fecundity and Atresia databases easily available and accessible for data submitters as well as end-users.	The current information on the Egg and Larvae database needs to be updated, and for the Fecundity and Atresia an information document needs to be prepared. This information needs to be collated in a logical manner into a quality document that will support maintenance of information and understanding of the data in both databases	3.2, 4.1, 4.2	Year 1 and 2: drafting and review, year 3: finalization.	User handbook and updated webpage with well-structured content.
d	Prepare management plan for upload of data to the Egg and Larvae and Fecundity and Atresia databases and provide version control to improve backtracking of modifications to the databases.	Currently there is no management plan for upload or resubmission of data, anyone can upload or resubmit data. It is also not possible to see if data has been resubmitted.	3.2, 4.1, 4.2	Year 1: drafting of management plan and prepare plan for insight into resubmissions, year 2: finalize management plan and draft insight resubmission plan, year 3: finalize insight resubmission plan.	Management plan for upload and re-submission of data and plan for providing insight in resubmissions.

Summary of the work plan

Year 1	<ul style="list-style-type: none"> Work on all ToRs in quarterly online meetings, intersessionally and during the physical annual meeting. Report orally to WGALES, DSTSG and DIG.
Year 2	<ul style="list-style-type: none"> Work on all ToRs in quarterly online meetings, intersessionally and during the physical annual meeting. Report orally to WGALES, DSTSG and DIG.
Year 3	<ul style="list-style-type: none"> Work on all ToRs in quarterly online meetings, intersessionally and during the physical annual meeting. Report orally and in final report to WGALES, DSTSG and DIG.

Supporting information

Priority	High. The Egg and Larvae as well as Fecundity and Atresia database are crucial to the storage of data of ICES coordinated ichthyoplankton surveys, as well as sharing these data to end-users. WGELFADG is crucial in the alignment of the Egg and Larvae as well as Fecundity and Atresia for the different ichthyoplankton surveys, and to form the communication channel between ICES data team, survey coordination groups and data end-users. These tasks are well aligned with the ICES strategic plan to continue to build our capacity and expertise in managing, analysing, and interpreting data to support science and advice.
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Resource requirements	A commitment of time from the members of the group consistent with progressing actions identified in the quarterly meetings.
Participants	Members of ICES Data Centre involved in Egg and Larvae as well as Fecundity and Atresia database developments, representatives of institutes that submit data, representatives of ichthyoplankton survey groups (WGALES, WGSINS, WGMEGS, WGACEGG).
Secretariat facilities	Community Sharepoint site, Remote meeting facilities.
Financial	No financial implications.
Linkages to advisory and science committees	This is an integral component to the overall Quality Assurance framework (of Advice) that ACOM together with the coordination group are describing.
Linkages to other groups	There is a close relationship with the ichthyoplankton survey groups, WGALES, WGSINS, WGMEGS and WGACEGG, as well as WGBIOP for quality assurance of ichthyoplankton and maturity data. There is a strong linkage to DIG as the main umbrella group for data/software governance structures.
Linkages to other organizations	None.

WGCATCH – Working Group on Commercial Catches

2023/MT/DSTSG02 The **Working Group on Commercial Catches** (WGCATCH), chaired by Karolina Molla Gazi, Netherlands (2023–2025), will work on ToR and generate deliverables as listed in the Table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	6–10 November 2023, ICES HQ, Copenhagen, Denmark	E-evaluation and interim report by 15 January 2024 to DSTSG	Karolina Molla Gazi (Netherlands) is new chair for 2023–2025; Liz Clarke (UK) ends 3-year term as chair.
Year 2024	4–8 November 2024, Gent, Belgium	E-evaluation and interim report by January 2025 to DSTSG	
Year 2025	00–00 [MONTH] 2025, [VENUE]	E-evaluation and final report by 31 January 2026 to DSTSG, ACOM, SCICOM	Karolina Molla Gazi (Netherlands) ends 3-year term; new chair(s) to be appointed.

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Review developments in the implementation of statistically sound catch sampling and estimation thereof.	Many ICES member states are moving towards more probabilistic catch sampling designs. For consistent data use in time-series it is necessary to document these changes, particularly in regard to practical	3.1, 3.2, 3.3, 3.5, 3.6	3 years	<ul style="list-style-type: none"> i. A glossary of definitions relevant to industry data collection, and an overview of industry data collection programs. ii. A review of sampling designs

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>sampling issues that make a strict probabilistic approach unfeasible as demonstrated by case studies.</p> <p>With the introduction of the Regional DataBase and Estimation System (RDBES), and the move within ICES to a transparent framework (TAF) for estimating catch parameters, and thereby putting more focus on estimation, clear case studies are needed to support this transition.</p> <p>There is also an increasing need to design commercial sampling programmes in multi-purpose context, to answer the multiple end-users needs. WGCATCH will continue to propose and endorse WK with the aim of future optimization at national/stock/regional levels.</p>			<p>by country with a special focus on probabilistic designs and implementation issues.</p> <p>iii. A review of methods of estimation by country with a special focus on design-based estimation, estimation using the RDBES format and packages, and estimation issues such as non-responses.</p>
b	Review developments in sampling and estimation practices of fishing activity variables (landings by species and fishing effort) and biological data (discards, length and age distributions, other biological	WGCATCH continues to review developments in sampling and estimation practices for collection of fishing activity variables (<i>landings by species and fishing effort</i>) and biological data (<i>discards, length and</i>	3.1, 3.2, 3.3, 3.5, 3.6	3 years	<p>i Finalize the publication of the best practices guidelines for SSF fishing activity data (<i>effort and landings</i>) collection and estimation practices. 2023</p> <p>ii. Summarizing inputs of sampling approaches to</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	parameters by species) in small-scale fisheries (SSF).	<p><i>age distributions, other biological parameters</i>) in small-scale fisheries (SSF), with the objective to ensure that the collection of fishing data from SSF across Europe are harmonized and comparable, sufficient for main end-user needs and to improve their quality.</p> <p>During its term, the WG will focus mainly on eight different aspects:</p> <p>1) Continue to develop best practices guidelines on sampling and census data for SSF fishing activity variables and evaluate its implementation.</p> <p>2) Continue the development of a data-quality risk assessment methodology for SSF fishing activity data, especially in the case of the implementation of a census approach.</p> <p>3) Continue to document SSF biological data sampling implemented in ICES Member states and develop best practice guidelines.</p> <p>4) Peer-review publication on SSF.</p>			<p>improve quality of SSF fishing activity data estimates. 2023–2025</p> <p>iii. Summary of discussions on the gap between control regulation and scientific data needs in the context of the implementation of the new control regulation. 2023–2024</p> <p>iv. Further developments of the data-quality risk assessment methodology for SSF fishing activity data were first implemented in 2018–2020 and evaluation of the eventual improvement of SSF data quality since its first assessment. 2024–2025</p> <p>v. SSF biological data sampling: Final documentation of the sampling effort developed in ICES Member States. 2023</p> <p>vi. SSF biological data sampling: Comparison on length frequency data from SSF and LSF and evaluation of the relevance and impact of SSF data for the stock assessment, linked with the the SSF sampling effort</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>5) Continue to evaluate and discuss the use of geospatial data (e.g. GPS, AIS) to improve SSF effort estimates.</p> <p>6) Continue to follow developments of the RDBES database for the proper integration of SSF data and their specificities.</p> <p>7) Agree on definitions and terminology on fishing effort and other fishing activity data and develop clear infographics regarding this information.</p> <p>8) Development of a table <i>“from data sources to fishing activity data information estimation”</i>.</p>			<p>documented in Year 1. 2023–2024</p> <p>vii. SSF biological data sampling; Development of best practices guidelines. 2024–2025</p> <p>viii. Finalize the Peer-review publication developed and first submitted during the previous work plan. 2023–2024.</p> <p>ix. Geospatial data: with a specific focus on SSF, feedback and advice to other ICES Working Groups dealing with this specific issue. 2023–2025</p> <p>x. RDBES: producing eventual recommendations, advice and feedback on their outcomes for the proper integration of SSF data and their specificities into RDBES for ICES Working Groups dedicated to its development. 2023–2025</p> <p>xi. In coordination with all the relevant ICES Working Groups, the development of a clear reference infographic for fishing effort and other fishing activity data. 2023–2024</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
					xii. Development of a table “ <i>from data sources to fishing activity data information estimation</i> ”, what could be calculated/derived/estimated and what could not. 2024–2025
c	Review developments in sampling and estimation of incidental bycatch of Protected, Endangered and Threatened Species (PETS) and other rare species and ensure that database structures support the implementation of the appropriate estimation procedures.	The sampling and estimation of incidental catches of PETS and other rare species in commercial fisheries has been a long-term ICES concern. WGBYC and WGCATCH are two ICES EGs involved in data compilation and estimation of such rare events and impacts and have been collaborating closely to ensure that bycatch is properly sampled and estimated in national sampling programmes. To improve collaboration between the two groups, WGBYC members participated in the last WGCATCH meeting to review best practices for sampling protocols for incidental bycatches. The roadmap for ICES bycatch advice describes the scientific needs and a path for ICES to strengthen its advice on incidental bycatch. WGCATCH has an important role in the roadmap by	3.1, 3.2, 3.3, 3.5, 3.6	3 years	i. Continue to support RDBES development to ensure bycatch data are included in the RDBES. Annual reporting. ii. Review bycatch estimations of PETS and rare species by other expert groups. Annual reporting. iii. Report on and support on-board sampling practices at national institutes with regard to PETS. Annual reporting. iv. Report on and support the redesign of national databases with regard to PETS. Annual reporting. v. Update the inventory of sampling programmes by ICES Member Countries where bycatches of protected, endangered, and threatened species (PETS) are recorded that was

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>developing sampling protocols for estimating PET by-catch risk and by improving data availability and quality (e.g. through monitoring).</p> <p>Further work is still to be developed particularly in relation to estimation procedures for rare species and ensure the incidental bycatches are included in the RDBES.</p>			initiated at WKPETSAMP in 2018.
d	Review and evaluate developments in the sampling design and estimation of electronic monitoring (EM) technologies.	<p>The expanding use of EM technologies in data collection underscores the importance for WGCATCH to evaluate the sampling designs the quality of data obtained with this sampling method and the estimation methods used to provide data to the stock assessments. It is necessary to establish comprehensive guidelines for quality assurance (QA) procedures and the integration of this new data source. Effective guideline development necessitates a collaborative approach involving other specialized subsidiary bodies in EM technologies.</p>	3.1, 3.2, 3.3, 3.5, 3.6	3 years	<p>i. Collaborate with WGTIFD, WGLEARN, RCG ISSG on Electronic Monitoring Technologies and other relevant subsidiary bodies to create a roadmap of the (past, present and future) work topics of each body, as well as of gaps that need to be addressed (2023–2024).</p> <p>ii. Collaborate with WGTIFD, WGLEARN, RCG ISSG on Electronic Monitoring Technologies and other relevant subsidiary bodies to create an overview of sampling designs and data quality issues in EM used by different countries (2023–2024).</p> <p>iii.</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
					Evaluate the EM sampling designs and quality of data obtained, and provide guidelines on the integration of this new data source also in the context of RDBES (2024–2025).
e	Collaborate in the advisory process, liaising with assessment groups and benchmarks on commercial catch issues and with other ICES groups dealing with other aspects of catch data (e.g. WGBIOP, WGRFS, WGQUALITY, WGTIFD, WGBYC), RCGs (LM) and commercial catch focused external projects.	Commercial catch data are a major input to ICES stock assessments. The accuracy of commercial catch data are highly dependent on the quantity and quality of the sampling and estimation carried by at the national level and stock coordination level. WGCATCH is the ICES EG that deals with sampling design, estimation and quality of commercial catch data that is provided to the assessment process by the national authorities. It is a key player in informing on the quality of the time-series used and suggesting improvements to sampling and estimation methods. Over 2020–2022, WGCATCH will work with the ACOM legacy groups and Fisheries Resources Steering Group (FRSG) to have a more active participation in the assessment and benchmark	3.1, 3.2	Routine ToR	<p>i. Address specific recommendations from assessment expert groups in relation to commercial catch data to be used/revise in future benchmarks</p> <p>ii. Actively seek involvement in a review and update of the current benchmark process for data compilation of commercial catch data, so these take recent WGCATCH findings into account</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>processes. Additionally, WGCATCH links with ACOM, SCICOM, DSTSG, EGs under DSTSG (e.g. WGBIOP, WGRFS) and the ICES secretariat to inform on guidelines on quality and quantity of catch data. WGCATCH further links and obtains information from research projects that address sampling and estimation of commercial catches.</p>			

Summary of the work plan

Year 1	<p>ToR a)</p> <ul style="list-style-type: none"> • Review case studies of industry data collection and estimation methods. Develop a glossary of definitions relevant to industry data collection and an overview of industry data collection programs. • Identify practical issues with sampling of commercial catches, and review case studies that address these. issues. <p>ToR b)</p> <ul style="list-style-type: none"> • Continue to develop best practices guidelines on sampling and census data for SSF fishing activity variables and evaluate its implementation: 1) Finalize the publication of the best practices guidelines for SSF fishing activity data (effort and landings) collection and estimation practices, 2) first development of case studies on sampling approaches implemented in MS to improve fishing activity data estimates and 3) first discussions on the gap between control regulation and scientific data needs in the context of the implementation of the new control regulation. • Continue to document SSF biological data sampling implemented in ICES MS and develop best practice guidelines: Final documentation of the sampling effort developed in ICES MS on the basis of the data collected in the previous Working Plan. Refine and populate intersessionally an informal data call for provision of length frequency data to compare length distribution by vessel length ranges for the stocks identified during the previous work plan. • Peer-review publication on SSF: Discuss the journal feedback following the first submission and develop a work plan to complete and finalize the paper intersessionally. • Continue to evaluate and discuss the use of geospatial data (e.g. GPS, AIS) to improve SSF effort estimates: with a specific focus on SSF, provide feedback and/or advice on works developed by other ICES Working Groups dedicated to this specific issue. For example, advice for the need of a document providing by gear and fishing activity data metrics the temporal resolution needed. Link with these ICES Working Groups will be done under this task. In this context, ToR b) could have specific tasks allocated by these groups which should be discussed during the WGCATCH general meeting.
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- Continue to follow developments of the RDBES database for the proper integration of SSF data and their specificities into: Following the year RDBES development work, produce eventual recommendations, advice and feedback on their outcomes for the proper integration of SSF data and their specificities into RDBES for ICES Working Group dedicated to its development. Link with these ICES Working Groups will be done under this task. In this context, ToR b) could have specific tasks allocated by these groups which should be discussed during the WGCATCH general meeting.
 - Agree on definitions and terminology on fishing effort and other fishing activity data and develop clear infographics regarding this information: Development of a list of terms/references; definitions to be discussed/agreed upon and for which clear infographics illustrating them are needed. Development of a work plan for intersessional work and Year 2.
 - Annual chapter in the report detailing work progress, next work plan and deliverables.

ToR c)

- Continue to support RDBES developments.
- Report and support on board sampling practices at national institutes, including re-design of national databases.
- Initiate review of bycatch estimations of PETS/rare species by other expert groups.

ToR d)

- Collaborate with WGTIFD, WGLEARN, RCG ISSG on Electronic Monitoring Technologies and other relevant subsidiary bodies to create a roadmap of the (past, present, and future) work topics of each body, as well as of gaps that need to be addressed. Create an overview of sampling designs and data quality issues in EM used by different countries.

ToR e)

- This ToR will be dealt with on a yearly basis by WGCATCH.
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Year 2

ToR a)

- Continue reviewing case studies of industry data collection and estimation methods. Develop a glossary of definitions relevant to industry data collection and an overview of industry data collection programs.
- Continue identifying issues with sampling designs and estimation and review case studies addressing these issues.
- Review estimation methods following the RDBES transition, with a special focus on design-based estimation.

ToR b)

- Continue to develop best practices guidelines on sampling and census data for SSF fishing activity variables and evaluate its implementation: 1) Discuss eventual feedback following the publication of the best practices guidelines for SSF fishing activity data (effort and landings) collection and estimation practices in Year 1, 2) continue the development of case studies on sampling approaches implemented in MS to improve fishing activity data estimates and 3) finalize the discussions on the gap between control regulation and scientific data needs in the context of the implementation of the new control regulation.
 - Continue the development of a data-quality risk assessment methodology for SSF fishing activity data, especially in the case of the implementation of a census approach: Populate the methodology developed in 2018–2020 and ask for feedback or comments from MS on their position in the Risk' map with the objective to improve the methodology.
 - Continue to document SSF biological data sampling implemented in ICES MS and develop best practice guidelines: Final comparison of length distribution for stocks identified in previous work plan by vessel length ranges based on data collected in intersessionally through an informal data call for provision of length frequency data. Analysis of length frequency data from SSF and LSF and evaluate the relevance and impact of SSF data for the stock assessment; link with the SSF sampling effort document in Year 1. First discussion on best practices guidelines for SSF biological data sampling.
 - Peer-review publication on SSF: Finalize the Peer-review publication developed and first submitted during the previous work plan.
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- Continue to evaluate and discuss the use of geospatial data (e.g. GPS, AIS) to improve SSF effort estimates: with a specific focus on SSF, provide feedback and/or advice on works developed by other ICES Working Groups dedicated to this specific issue. Link with these ICES Working Groups will be done under this task. In this context, ToR b) could have specific tasks allocated by these groups which should be discussed during the WGCATCH general meeting.
 - Continue to follow developments of RDBES database for the proper integration of SSF data and their specificities into: Following the year RDBES development work, produce eventual recommendations, advice and feedback on their outcomes for the proper integration of SSF data and their specificities into RDBES for ICES Working Group dedicated to its development. Link with these ICES Working Groups will be done under this task. In this context, ToR b) could have specific tasks allocated by these groups which should be discussed during the WGCATCH general meeting.
 - Agree on definitions and terminology on fishing effort and other fishing activity data and develop clear infographics regarding this information: Following work developed in Year 1 and feedback of all relevant ICES Working Groups (e.g. WGSFD, WGTIFD), development of a clear reference infographics for fishing effort and other fishing activity data.
 - Development of a table “from data sources to fishing activity data information estimation”: Discussion of what could be calculated/estimated/derived from different data sources (e.g. logbooks, coastal logbooks, sales notes, positional data, ...) regarding the fishing activity data estimates needed. Development of a first table.
 - Annual chapter in the report detailing work progress, next work plan and deliverables.

ToR c)

- Continue to support RDBES.
- Report on and support on-board sampling practices at national institutes, including re-design of national databases.
- Continue review of bycatch estimations of PETS species by other expert groups.
- Intersessional liaison with WGBYC and draft ToRs for a WK that addresses the estimation of rare things (e.g. species, events; WKRARE, 2022) in the following year. Taking the review of present methods into account. Approve proposed ToRs at the meeting.

ToR d)

- Continue collaboration with WGTIFD, RCG ISSG on Electronic Monitoring Technologies and other relevant subsidiary bodies.
- Continue the overview of sampling designs and data quality issues in EM used by different countries.
- Evaluate the EM sampling designs and data quality.

ToR e)

- This ToR will be dealt with on a yearly basis by WGCATCH.
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Year 3

ToR a)

- Continue to identify issues with sampling designs and estimation and review case studies addressing these issues.
- Continue reviewing estimation methods following the RDBES transition, with a special focus on design-based estimation.

ToR b)

- Continue to develop best practices guidelines on sampling and census data for SSF fishing activity variables and evaluate its implementation: Following the development of case studies on sampling approaches implemented in MS in Years 1 and 2, finalize a document summarizing inputs of sampling approaches to improve quality of SSF fishing activity data estimates.
 - Continue the development of a data-quality risk assessment methodology for SSF fishing activity data, especially in the case of the implementation of a census approach: Reproduce it taking into account improvements considered in Year 2. Intersessionally request MS for data needed to implement it. On this basis, monitor and evaluate the eventual improvement of SSF fishing activity data reporting in MS since the first assessment in 2018–2020.
 - Continue to document SSF biological data sampling implemented in ICES MS and develop best practice guidelines: Development of best practices guidelines for SSF biological data sampling.
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- Continue to evaluate and discuss the use of geospatial data (e.g. GPS, AIS) to improve SSF effort estimates: with a specific focus on SSF, provide feedback and/or advice on works developed by other ICES Working Groups dedicated to this specific issue. Link with these ICES Working Groups will be done under this task. In this context, ToR b) could have specific tasks allocated by these groups which should be discussed during the WGCATCH general meeting.
 - Continue to follow developments of RDBES database for the proper integration of SSF data and their specificities into: Following the year RDBES development work, produce eventual recommendations, advice and feedback on their outcomes for the proper integration of SSF data and their specificities into RDBES for ICES Working Group dedicated to its development. Link with these ICES Working Groups will be done under this task. In this context, ToR b) could have specific tasks allocated by these groups which should be discussed during the WGCATCH general meeting.
 - Agree on definitions and terminology on fishing effort and other fishing activity data and develop clear infographics regarding this information: Finalization and broadcasting of the reference infographics for fishing effort and other fishing activity data developed in Year 2.
 - Development of a table “from data sources to fishing activity data information estimation”: Finalization of the table “from data sources to fishing activity data information estimation”, what could be calculated/derived/estimated and what could not.
 - Annual chapter in the report detailing work progress, next work plan and deliverables.

ToR c)

- Continue to support RDBES
- Report on and support on-board sampling practices at national institutes, including re-design of national databases.

ToR d)

- Continue collaboration with WGTIFD, RCG ISSG on Electronic Monitoring Technologies and other relevant subsidiary bodies.
- Continue evaluation of the EM sampling designs and data quality.
- Draft guidelines for quality assurance procedures and integration of this new data source also in the context of RDBES.

ToR e)

- This ToR will be dealt with on a yearly basis by WGCATCH.
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Supporting information

Priority	WGCATCH supports the development and quality assurance of regional and national catch sampling schemes and estimation procedures that can provide reliable quality input data to stock assessment and advice while making the most efficient use of sampling resources. As catch data are the main input data for most stock assessments and mixed fisheries modelling and an essential component of the analysis of ecosystem effects of fisheries, especially with regard to the application of the Precautionary Approach, these activities are considered to have a 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 negligible. WGCATCH builds extensively on experiences gained within PGCCDBS, WKACCU, WKPRECISE, WKMERGE, WKPICS, SGPIDS, WGRFS, RDBES WGs and Wks and previous WGCATCH work in the period 2014–2022. European countries are encouraged to provide the WG with any requested documentation of their sampling programmes and manuals, estimation methods, and quality assurance procedures, for review and feedback by the WG, and to ensure that their national members of WGCATCH have sufficient resources to conduct the necessary intersessional work to address the ToRs. The attendance of 1–2 top-level experts in the area of statistically sound sampling and estimation will be secured to review the quality of the final outputs of WGCATCH.

Participants	The Group is normally attended by some 30–40 participants, including members, and chair-invited 1–2 external experts.
Secretariat facilities	None.
Financial	Member States may fund this through their EMFF programme. ICES may cover the attendance of reviewers.
	WGCATCH falls under the joint ACOM/SCICOM Data Science and Technology Steering Group (DSTSG), and supports the ICES advisory process by promoting improvements in the quality of fishery data underpinning stock-based and mixed fishery assessments, ecosystem indicators related to fishery effects, and in developing data quality indicators and quality reports for use by assessment EGs and benchmark assessments.
Linkages to other committees or groups	There is a very close working relationship with all catch-related EGs and end-users including WGBIOP (in relation to the collection of stock-based biological variables from fishery catches), WGQUALITY (in relation to data requirements of stock assessment EGs and benchmark assessment groups, optimization of catch sampling programmes and communication of quality information on commercial catch data), WGBYC (in relation to the sampling design and estimation of PETS bycatch and other incidental bycatches), RCM/RCGs and the Liaison Meeting (e.g. in relation to data requirements and regional sampling designs), the WGRDBESGOV and related WGs and WCs and the ICES Data Centre (in relation to RDBES issues), STECF EWGs dealing with EU-MAP and other legislative changes that impact catch sampling and JRC (in relation to data provision from commercial catch sampling programmes).
Linkages to other organizations	The work of this group is closely aligned with similar work in FAO, GFCM, CECAF, NAFO/NEAFC and the Census of Marine Life Programme.

WGAGFA – Working Group on the Application of Genetics in Fisheries and Aquaculture

2023/MT/DSTSG03³ The **Working Group on the Application of Genetics in Fisheries and Aquaculture** (WGAGFA), chaired by Naiara Rodriguez-Ezpeleta, Spain, and Ian Bradbury, Canada, will work on ToR and generate deliverables as listed in the Table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2024	13–16 May 2024, Bergen, Norway	E-evaluation by 27 May 2024 to DSTSG	Incoming chair: Ian Bradbury
Year 2025	6–8 May 2025, ICES HQ, Copenhagen, Denmark	E-evaluation by 19 May 2025 to DSTSG	
Year 2026	TBD	E-evaluation and final report by 30 June 2026 to DSTSG, ACOM, SCICOM	

³ WGAGFA was transferred from ASG to DSTSG in January 2024.

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Review the significance of genetic diversity for the inclusion in the MSFD D3C3.	<p>The MSFD – Marine Strategy Framework Directive – requires that Good Environmental Status (GES) is achieved in European waters. The ES of commercially exploited species is captured by criterion D3C3 under MSFD Decision (EU) 2017/848. Stock status is assessed using fishing mortality rate (F) and spawning-stock biomass (SSB). These have been also adopted for use under the MSFD (criteria D3C1 and D3C2). A third criterion (D3C3) is included (but not applied so far), D3C3, to monitor the age and size distribution of individuals in a population. This criterion explicitly includes “limited adverse effects of exploitation on genetic diversity” as an indicator of Good Environmental Status. For all these features, “Member States shall establish threshold values through regional or subregional cooperation for each population of species in accordance with scientific advice</p>	2.2, 6.1, 6.3	3 years	<p>ICES Report summarizing the genetic features of fish populations that are important and quantifiable, identifying the candidate indicators to assess these features proposing potentially relevant criteria. The report will serve as the basics for developing recommendations to ACOM, WGBIODIV and Marine Strategy Framework Directive (MSFD) Competence Centre (MCC). To reach the scientific community and encourage further discussions, the findings will also be summarized and peer-reviewed for publication in a relevant journal.</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		[...]”. Work is underway within ICES to define descriptors for this criterion (WKD3C3SCOPE June 2023). During this workshop, candidate indicators have been proposed to capture fish populations’ features like size and age distribution, but no proposals were made for a genetic indicator, despite genetic diversity being mentioned as an essential feature to monitor. This ToR is proposed in order to identify genetic features that are important for a healthy fish population and quantifiable (Year 1), discuss candidate indicators to assess these features (Year 2) and potential develop relevant criteria (Year 3).			
b	Review latest developments on emerging genetic and epigenetic techniques for their applicability to reveal life-history traits and stages in fish and other marine resources and their TRL regarding their application for fisheries monitoring towards EBFM	Information on marine species population age, maturity and sex ratio, as well as spawning location and timing, are critical for monitoring population dynamics of commercial stocks, ultimately feeding into stock assessments. Age is currently determined mostly through hard structure, and sex and maturity determination are done by studying	3.3, 4.4, 6.1	3 years	ICES report including i) a review the peer-reviewed literature and ongoing research and developments related to genetic and epigenetic techniques for assessing life-history traits and stages in fish and other marine resources, and ii) Overview of how “trends” in genetics could supplement or replace current methods for life-history traits and stages

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>the gonads of individuals. Recent developments in genetics and epigenetics could enable the measurement of these characteristics, but these approaches are not fully mature. Measuring epigenetic modifications themselves is also changing from the more classic bisulfite sequencing on Illumina to methylation analysis using either Oxford Nanopore or PacBio sequencing, where the methylation analysis can be obtained directly from the same samples used for other genetic analysis through for instance low coverage whole genome sequencing and direct sequencing of DNA molecules. The potential of these new methodological approaches will be explored with respect to their application on tissue and environmental samples. This ToR will review the literature and evaluate the ongoing research on latest developments on emerging genetic and epigenetic techniques for their applicability to reveal life-history traits and stages in fish and other marine resources. Their TRL regarding their application for fisheries</p>			<p>determination needed for stock assessments.</p> <p>The target audience for this report would be fisheries and environmental research institutes involved in monitoring, assessment and advice, currently relying on the traditional analyses for life-history traits and stages determination.</p> <p>To reach the wider scientific community and encourage further discussions, the findings will also be submitted for publication in a relevant journal in the form of a perspectives or evidence synthesis paper</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		monitoring towards EBFM will also be discussed.			
c	Review of genetic introgression and the potential for genetic gain for non-salmonid emerging aquaculture species: cleaner fish and Atlantic cod	<p>There is growing interest for new aquaculture species beyond salmonids. Because of well-established technologies, these emergences tend to be rapid, so do the potential impacts of such activities. Multiple species of cleaner fish are frequently being used for biological delousing within the Atlantic salmon aquaculture industry. The origin of these individuals varies and includes local wild-caught individuals, translocated wild individuals, farmed breed non-selected individuals and artificially selected individuals, all of which create potential for introgression with wild stocks. Overall mortality of cleaner fish in aquaculture is high and is a major welfare issue. With the establishment of breeding programs, genetic gain for increased robustness and grazing activity is possible. However, the domestication process will also result in genetic divergent lines, with further potential consequences for wild stocks if interbreeding. Atlantic cod aquaculture is</p>	1.8, 2.7, 4.5, 5.6	3 years	<p>ICES report including i) a review of the peer-reviewed literature and ongoing research and developments (by utilizing the broad international network of the group) related to genetic introgression and the potential for genetic gain for all commercial cleaner fish species, and Atlantic cod, and ii) an overview of the status, including recommendations to limit, evaluate and mitigate introgression, to improve genetic gain, and potentially welfare, for these species. The aim of the report is to compile all data, identify areas where parallel knowledge from salmonid aquaculture can/cannot be utilized and thus identify knowledge gaps. The target audience for this report will be industry, regulating authorities and conservation programmes.</p> <p>To reach the scientific community and encourage further discussions, the findings will also be summarized and peer-reviewed for publication in a relevant journal</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>rapidly re-emerging after a nearly-complete halt for over a decade (in Norway). Because of its behaviour, cod is a species more prone to escape than Atlantic salmon. Spawning within net pens may also pose a risk for the establishment of feral offspring in the wild, that may further lead to genetic introgression in the following generations. Due to several observations of escapees from new aquaculture farms (both reported and unreported), the questions related to introgression of domesticated cod into natural populations is pressing. This ToR will review the emerging literature on genetic introgression of both translocated and/or domesticated cleaner fish and domesticated Atlantic cod and explore the potential for genetic gain in these emerging aquaculture species. This will include an overview of the expanding work on population genetic structure in these species, in order to understand the potential consequence of introgression due to break down of local adaptation. Furthermore, we will assess the genetic tools for identifying/tracing</p>			

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		domesticated escapees, and quantifying introgression.			

Summary of the work plan

Year 1	<p>ToR a) Review of the literature on MSFD thresholds, with a particular focus on genetic indicators currently proposed for other descriptors (D1) to be collected in a repository. Identify genetic features that are important for a healthy fish population and quantifiable, to be considered as candidate indicators.</p> <p>ToR b) Review the literature on latest developments on emerging genetic and epigenetic techniques for their applicability to reveal life-history traits and stages in fish and other marine resources.</p> <p>ToR c) Review the peer-reviewed literature documenting genetic introgression and the potential for genetic gain in commercial cleaner fish species and Atlantic cod.</p>
Year 2	<p>ToR a) Define a list of genetic measures that could be considered for this descriptor as qualitative indicators, and possible thresholds will be discussed. Start drafting report and manuscript.</p> <p>ToR b) Evaluate the ongoing research and development on genetic and epigenetic techniques for their applicability to reveal life-history traits and stages in fish and other marine resources and discuss their TRL regarding their application for fisheries monitoring towards EBFM. Start drafting report and manuscript.</p> <p>ToR c) Evaluate the ongoing research and development related to genetic gain and genetic introgression in these emerging aquaculture species. Start drafting the report/manuscript.</p>
Year 3	<p>ToR a) Report dissemination and Manuscript submission.</p> <p>ToR b) Report dissemination and Manuscript submission</p> <p>ToR c) Report dissemination and Manuscript submission</p>

Supporting information

Priority	The WGAGFA Terms of Reference for the reporting period 2024 to 2026 will produce information, and knowledge in line with the ICES Science priorities. Particularly ecosystem science, impacts of human activities, observation and exploration, emerging techniques and technologies and seafood production, as well as conservation and management will be tackled and reported upon.
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 is normally attended by some 40 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory and science committees	There are no obvious direct linkages.

Linkages to other groups	There is a very close working relationship with EPDSG, EOSG, EPISG and FRSG. Additionally, several EGs, particularly WGSEDA but also including WGITMO, WGBIODIV, WGBOSV, WGREIA, SIMWG and BOG.
Linkages to other organizations	European Commission; Scientific, Technical and Economic Committee for Fisheries (STECF); European Fisheries Control Agency (EFCA); GFCM; FAO; ICCAT; Regional Coordination Groups

WGBIOP – Working Group on Biological Parameters

2023/MT/DSTSG05 The **Working Group on Biological Parameters (WGBIOP)**, chaired by Karen Bekaert, Belgium, Konstantina Ofridopoulou, Greece, and Valerio Visconti, UK, will work on ToR and generate deliverables as listed in the Table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2024	7–10 October 2024, Torretta Granitola, Sicily, Italy	E-evaluation and interim report by 31 October 2024 to DSTSG	
Year 2025	6–10 October 2025, Boulogne-sur-Mer, France	E-evaluation and interim report by TBD 2025 to DSTSG	
Year 2026	TBD	E-evaluation and final report by TBD 2026 to DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Quality assurance	Organising, reviewing and prioritizing exchanges and workshops requested from EGs, Wks and other ICES-related groups represent the base for the quality assurance routine of this ToR. It is also vital to plan these in line with the ICES benchmark schedule and boost the communication loop with assessment groups. Also, updating and maintaining guidelines is a key point for quality assurance.	3.1 and 3.2	Year 1, 2, 3	1) Coordinate communication between WGBIOP members and the corresponding stock assessment coordinator/group of interest based on the current rolling issues list and/or other emerged issues and recommendations; 2) Complete annual overview of planned studies, exchanges and workshops (i.e. update of master tables) and planning of new calibration events; 3) Review and update the guidelines for calibration events

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
					<p>and reports to be published in the ICES Library including fixing DOI where applicable (e.g. SmartDots publications).</p> <p>4) Overview and recommendation of validation studies (age, maturity, etc.).</p>
<p>b</p>	<p>Promoting the unequivocal understanding and adoption of SMSF scale as well as advising of the histological approach as validation method of maturity staging.</p>	<p>Since 2020 only a few countries have reported maturity using the SMSF scale, and several institutes and WGs pointed out confusion when it comes to the interpretation of the (sub)stages. Given that histology is the key to accurate maturity staging, planning its routine use is the goal. Also, the participation of maturity experts within WGBIOP is currently limited and expanding this expertise basis is desirable.</p>	<p>3.1, 4.1</p>	<p>Year 1, 2, 3</p>	<p>1) Liaise with WGs to clarify the (sub)stages, ensuring the proper adoption of SMSF scale and receiving feedback on potential issues related to maturity.</p> <p>2) Produce stock-specific tables with the identification of the main timing of gonadal development and spawning period supporting the proper use of the SMSF scale.</p> <p>3) Correct the previously published conversion tables to SMSF scale.</p> <p>4) Draft a working plan for the adoption of the histological approach as validation or estimation method, and liaise with RCGs to establish the working plan at the European scale according to the evaluation needs.</p> <p>5) Encourage evenly distributed WGBIOP participation of experts on maturity and other biological parameters.</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
c	Follow-up on emerging tools and methods for determination of biological parameters.	Many new methods for the determination of biological parameters such as Artificial Intelligence (AI), genetics, shape analysis, otolith microchemistry, etc. are being developed over the last years. This is of interest to WGBIOP who aims to be aware of the latest developments. The goal of this ToR is to monitor, coordinate and facilitate these developments where possible.	3.1, 4.1, 4.3	Year 1, 2, 3	<ol style="list-style-type: none"> 1) Liaise with relevant ICES Working Groups (e.g. WGMLEARN, WGSMART, SIMWG) 2) Facilitate the development of emerging tools related to biological parameters (e.g. set up a central image repository for AI) 3) Provide guidelines for standardization of methods and protocols for emerging tools.
d	Review the procedures used in calibration events and facilitate the transfer of error data into stock assessments.	The statistical methods applied to analyse the results from SmartDots calibration events haven't been revised since 2000. In recent years progress has been made by WGBIOP, in cooperation with WGSMART to identify errors in age and maturity estimations via calibration events. Steps towards the incorporation of age and maturity estimation errors into the stock assessment process have been made (WKMACQI, 2018, WKAMEMSA, 2021) and some stock assessment and benchmark groups have incorporated this error data into the stock assessment model runs (WKBALPEL and WKSSNSK).	3.1	Year 1, 2, 3	<ol style="list-style-type: none"> 1) Liaise with relevant assessment working groups to facilitate the use of age error data in stock assessment. 2) Revise statistical procedures to improve the reporting of calibration events e.g. by taking into account the age plus groups, and quality scores (AQ or QS) and investigate temporal and spatial stratification of samples at national and/or regional level. 3) Identify potential sources of errors in the procedures involved in generating Error Matrices (EM) or the raw data supplied to the stock assessors.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		Further work is required to correctly identify and account for the error sources included in these events. The aim of this ToR is to revise the statistical methods used to identify the errors in calibration events, as well as improve the sampling design for setting up calibration events and facilitating the integration of error data in stock assessments.			4) Develop an improved sampling design for SmartDots calibration events to account for these sources of errors. 5) Organize a second workshop on the use of Ageing and Maturity Staging Error Matrices in Stock Assessment (WKAMEMSA).
e	Potential role of additional biological and life-history parameters in stock assessments and fisheries advice and evaluation of significant changes in time.	The scope of this ToR is to assess the possibility of improving the quantity and quality of the data used in assessment and advice, considering data availability.	3.2, 4.1, 5.1	Year 1, 2, 3	1) Review the links between biological and life-history parameters and (climate-induced) changes in environmental conditions. 2) Document available cases in which biological or life-history parameter estimates were used as additional information to improve the understanding of the ICES/GFCM stock health. 3) Assess options to present biological parameters as supplementary diagnostics in addition to the standard graphs used in stock assessment and fisheries advice, within the scope of development towards ecosystem-based fisheries advice.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
					4) Assess accessibility of data and quality assurance of additional biological and life-history parameters.
f	Planning and creating reference collections and overseeing the maintenance of the reference collections	The scope of this ToR is to develop an approach for the creation of reference collections. A reference collection is a collection of images, of a validated biological parameter (e.g. maturity) or consensus-derived results (e.g. age). The purpose of a reference collection is to have a set of reference materials for calibration and training of new and established readers. It is important therefore that reference sets are suitable for calibration and training purposes. Consistency in approach, together with predefined requirements is key.	3.1, 4.1	Year 1, 2, 3	1) Liaise with WGSMAART for development and feedback on the reference collections and training module 2) Provide guidelines for the setup of reference collections and their use for training, quality assurance and control 3) Compile a list of existing reference collections, where to find them and who to contact 4) Integrate existing reference collections in SmartDots once the new module is available. 5) Supervise the integration of new samples in the reference collections by the event coordinators

Summary of the work plan

Year 1	Evaluate the quality of biological parameters used in assessments and coordinate communication with the corresponding assessment coordinators. Promote the correct use and adoption of the new scale of maturity stages. Monitor, coordinate and facilitate the development of emerging tools concerning the biological parameters. Review the procedures used in calibration events and their error mitigation. Investigate the possibility of improving the quantity and quality of the data used in assessment and advice according to data availability. Scheduling of exchanges, workshops and validation studies aligned with the benchmark cycle, and creation and maintenance of reference collections and guidelines.
Year 2	Evaluate the quality of biological parameters used in assessments and coordinate communication with the corresponding assessment coordinators. Promote the correct use and adoption of the new scale of maturity stages. Monitor, coordinate and facilitate the development of emerging tools concerning the biological parameters. Review the procedures used in calibration events and their error mitigation. Investigate the possibility of improving the quantity and quality of the data used in assessment and advice according to data availability. Scheduling of exchanges, workshops and validation studies aligned with the benchmark cycle, and creation and maintenance of reference collections and guidelines.

Year 3	Reviewing the status of issues, achievements and developments concerning biological parameters and quality assurance of life-history parameters provided for assessment and management processes. Reviewing the emerging tools and database developments for providing and accessing biological parameters information. Identify future needs in line with the ICES objectives and Science Plan and the wider marine environmental monitoring and management within Europe and propose a future work plan improving quality assurance of biological parameters.
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Supporting information

Priority	The main objective of WGBIOP will be to support the development and quality assurance of regional and national provision of biological parameters as reliable input data to integrated ecosystem stock assessment and advice while making the most efficient use of expert resources. As biological parameters are among the main input data for most stock assessments and mixed fishery modelling, these activities are considered to have a very high priority.
Resource requirements	None
Participants	All National Age Reader/Maturity Stager Coordinators (ICES and GFCM) will be invited. Experts relevant to the current benchmarks of the year of WGBIOP will be invited as well as relevant external experts such as statisticians or specific EG members.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory and science committees	There are no obvious direct linkages.
Linkages to other groups	There is a very close working relationship with all the groups in DSTSG, as well as BOG and ACOM. It is also very relevant to the WGMLEARN, WGSMAART, SIMWG.
Linkages to other organizations	

WGRDBES-EST – Working Group on Estimation with the RDBES data model (WGRDBES-EST)

2023/MT/DSTSG07 The **Working Group on Estimation with the RDBES data model (WGRDBES-EST)**, chaired by Ana Cláudia Fernandes, Portugal, and Richard Meitern, Estonia, will work on ToR and generate deliverables as listed in the Table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2024	14–18 October 2024, Lisbon, Portugal	E-evaluation and interim report by 18 December 2024 to DSTSG	First meeting with new chairs; previously Kirsten Birch Håkansson and Nuno Prista.
Year 2025	00–00 October 2025, TBD	E-evaluation and interim report by 18 Decemeber 2025 to DSTSG	
Year 2026	TBD	E-evaluation and final report by 18 Decemebre 2026 to DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Continue to develop and document R scripts and functions for statistical estimation using the RDBES data format	<p>The Regional Database & Estimation System (RDBES) will be extensively used by ICES member states, the EU Regional Coordination Groups, and ICES expert groups to store detailed commercial fisheries sample data. The RDBES will also replace the current ICES InterCatch system and function both as a database and an estimation system for ICES Fisheries Advice. Estimation within the RDBES will be done by means of R-scripts and functions that secure the transparency and reproducibility of assessment inputs. The estimation code will ultimately integrate TAF and make national and regional estimates more transparent. WGRDBES-EST has developed a first set of functions that carry out the simpler forms of design-based estimation. WGRDBES-EST will continue and finalize that work, extending it to more complex statistical estimation methods namely ratio estimation.</p>	3.1, 3.2, 3.3	Regular activity every year with intersessional work	Documented R-scripts and functions to be added to RDBEScore package

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
b	Develop and document R scripts and functions for visualization of data in RDBES data format	In parallel with estimation developments (ToR a) there is a need to develop R functions that summarize and visualize data in the RDBES format. These functions will be used to build summaries and overviews of data available for use in ICES AWGs, RCGs, EGs related to commercial fisheries data (e.g. WGCATCH and WGBYC) and national users.	3.1, 3.2, 3.3	Regular activity every year with intersessional work	Documented R-scripts and functions to be added to RDBESvisualize package
c	Coordinate the peer-review and inclusion of ToR a) and ToR b) outputs in the RDBES packages	Worldwide availability and systematic code and methodological peer review of RDBES functions may be achieved by the incorporation of those functions in a package published on a public github repository (https://github.com/ices-tools-dev/).	3.1, 3.2, 3.3	Regular activity every year with intersessional work	RDBEScore and RDBESvisualise packages published in ICES github alongside associated documentation and vignettes
d	Identify problems with RDBES data model relating to statistical estimation	The RDBES data model keeps being improved and updated as feedback is received from RCGs, EGs (e.g. WGCATCH, WGBYC), national data submitters and data users. The implications of those improvements and updates for estimation within the RDBES need continuous evaluation. In	3.1, 3.2, 3.3	Regular activity every year	List of recommendations to ICES data center, Core Group of RDBES development and WGRDBESGOV on aspects needing development in the RDBES data model

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		addition as R code is developed and tested additional improvements to the RDBES data model may be found needed so that specific estimation methods can be implemented or specific results produced. WGRDBES-EST will contribute to the identification and evaluation of these new features and data-model related aspects.			
e	Establish a road forward to the development of present and future code related to statistical estimation that leads to improved inputs to stock assessment	As the work of WGRDBES-EST progresses there is a need to update and inform WGRDBESGOV on the best path forward to keep developing the code required for commercial catch estimation carried out within ICES.	3.1, 3.2, 3.3	Regular activity every year	List of recommendations to WGRDBESGOV on aspects needing consideration in efforts to improve estimation of commercial catches
f	Collaborate with WGRDBESGOV and WGTAFGOV to secure the integration of outputs from WGRDBES-EST in TAF	Transparency on the use of outputs from WGRDBES-EST can be achieved by integrating the estimation scripts and/or its outputs in TAF.	3.1, 3.2, 3.3	Regular activity every year	Outputs from WGRDBES-EST are fit and ready for integration within TAF

Summary of the work plan

Year 1	<p>ToR a) Discuss the feedback from WGRDBESGOV and RDBES core group on WGRDBES-EST progress alongside results achieved intersessionally, and identify the R-code from the RDBEScore package that needs development, refinement and/or testing. Continue to develop that code and functions.</p> <p>ToR b) Continue to develop and document R scripts and functions for visualization of data in RDBES data format to be compiled in the RDBESvisualise package. Discuss new types of summary information useful to be included in the RDBESvisualise package.</p> <p>ToR c) Continue the work in RDBEScore and RDBESvisualise packages, incorporating existing developments; prepare stand-alone ices packages; test and implement compatibility of both packages with CRAN requirements; suggest a work-flow and roadmap for peer-review of RDBEScore and RDBESvisualise functions and scripts.</p>
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	<p>ToR d) Evaluate updates of the RDBES data model from an estimation perspective. Document any problems with RDBES data model relating to statistical estimation and suggest solutions.</p> <p>ToR e) Evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV.</p> <p>ToR f) Continue the collaboration with WGRDBESGOV (and relevant groups thereunder) and WGTAFGOV to identify requirements for an integration of WGRDBES-EST outputs into TAF.</p>
Year 2	<p>ToR a) Discuss the feedback from WGRDBESGOV and RDBES core group on last years progress alongside developments achieved in intersessional work, related WKs and WGs and individual contributions related to commercial catch estimation. Identify the R-code from the RDBEScore package that needs development, refinement and/or testing. Develop that code and functions.</p> <p>ToR b) Continue to develop and document R scripts and functions for visualization of data in RDBES data format to be compiled in the RDBESvisualise package. Test and get feedback from possible end-users of the package, to improve the functions and scripts.</p> <p>ToR c) Continue the work in RDBEScore and RDBESvisualise packages, incorporating existing and new developments; prepare a stand-alone ices Package; test and implement compatibility of the RDBEScore package with CRAN requirements; test work-flow and advise on roadmap for longer term RDBES packages maintenance to WGRDBESGOV.</p> <p>ToR d) Evaluate intersessional updates of the RDBES data model from an estimation perspective. Document any problems with RDBES data model relating to statistical estimation and suggest solutions.</p> <p>ToR e) Evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV.</p> <p>ToR f) In collaboration with WGRDBESGOV (and relevant groups thereunder) and WGTAFGOV conclude on requirements for a integration of WGRDBES-EST outputs into TAF and adapt output to the requirements.</p>
Year 3	<p>ToR a) Discuss the feedback from WGRDBESGOV and RDBES core group on last years' progress alongside developments achieved in intersessional work, related WKs and WGs and individual contributions related to commercial catch estimation. Identify the R-code from the RDBEScore package that needs development, refinement and/or testing. Develop that code and functions.</p> <p>ToR b) Continue to develop and document R scripts and functions for visualization of data in RDBES data format to be compiled in the RDBESvisualise package. Continue to test, incorporate and/or get feedback from possible end-users of the package, to improve the functions and scripts.</p> <p>ToR c) Continue the work of previous year in RDBEScore and RDBESvisualise packages, incorporating new developments; Publish the RDBES packages on CRAN.</p> <p>ToR d) Evaluate intersessional updates of the RDBES data model from an estimation perspective.. Document any problems with RDBES data model relating to statistical estimation and suggest solutions.</p> <p>ToR e) Evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV.</p> <p>ToR f) Continue the work of previous year and in collaboration with WGRDBESGOV (and relevant groups thereunder) and WGTAFGOV keep updated on potential changes in the requirements for integration.</p>

Supporting information

Priority	<p>This working group is considered of very high priority. The activities of this WG will promote the development of a Regional Database and Estimation System (RDBES) by developing the algorithms and code required for the estimation of commercial catches within the RDBES. The RDBES will be integrated in TAF and work as a database for both ICES and the Baltic Sea, North Sea & Eastern Arctic, and North Atlantic Regional Coordination Groups (RCCs), producing the high-quality, transparent, estimates required by ICES Fisheries Advice.</p>
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Resource requirements	The members of the core group of RDBES development are requested to participate and coordinate algorithm and code development ahead of the meetings. Participation of the ICES data centre is needed with regards to expertise in package development and maintenance.
Participants	The Group is normally attended by about 20 members. Participants should be proficient in writing own scripts and functions in R language and/or have good knowledge of survey sampling and estimation.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory and science committees	There are no direct linkages with ACOM, but most of the Stock Assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other groups	There is a direct link to WGRDBESGOV, the RDBES core group and close links to activities of WGTAFGOV, WGQUALITY, WGCATCH and WGBYC. There is an indirect link with WGRFS and WGBIOP.
Linkages to other organizations	The RDBES estimates are connected to regional data collection defined by the RCGs under the European Commission. The RDBES will also support the ICES countries in providing data for both national and international assessments and optimizing their sampling programmes. In the case of EU MS, the RDBES is expected to facilitate and improve the quality of provision of commercial catch data requested under different data calls.

WGRDBES-StockCoord – Working Group on Stock Coordination with the RDBES data model

2023/MT/DSTSG10 The **Working Group on Stock Coordination with the RDBES data model** (WGRDBES-StockCoord), chaired by Sofie Nimmegeers, Belgium (2024–2026), and Kirsten Birch Håkansson, Denmark (2024–2026), will work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2024	21–25 October 2024, online meeting	E-evaluation and interim report by 18 December 2024 to DSTSG	Working group established.
Year 2025	00–00 month 2025, [VENUE]	E-evaluation and interim report by 18 December 2025 to DSTSG	
Year 2026	00–00 month 2026, [VENUE]	E-evaluation and final report by 18 December 2026 to DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Finalize the specification of the new National and Regional Catch Estimates Format (RCEF). Compile specifications of the commercial catch inputs to the main	The Regional Database & Estimation System (RDBES) provides flexibility in national and regional estimation that goes beyond what is currently	3.1, 3.2, 3.3	1 year (2024)	Finalized data model and documentation for exchange format. Finalized data model and documentation of main inputs to

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	stock assessment models used in ICES AWGs.	offered by ICES InterCatch. WKRDBES-Raise&TAF (1-2) proposed a first set of specifications for a new national/regional level exchange format (RCEF) that while being compatible with InterCatch also allows the exploration of the new possibilities of estimation that RDBES data offers. A subgroup of WGRDBESGOV further elaborated on those specifications and the final proposal needs to be discussed and evaluated from a practical implementation point of view and, if needed, adjusted.			stock assessment.
b	Develop and document R-scripts and functions for stock coordination using the National and Regional Catch Estimates Format (RCEF).	The Regional Database & Estimation System (RDBES) will be extensively used by ICES member states, the EU Regional Coordination Groups, and ICES expert groups to store and estimate national and regional commercial fisheries data. The RDBES will replace the ICES InterCatch system and function both as a database and an estimation system for ICES Fisheries Advice. Stock coordination within the RDBES will be done using R-scripts and functions that build	3.1, 3.2, 3.3	Regular activity every year with intersessional work.	Documented R-functions and example vignettes to be included in RDBESstockCoord package.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>from national/regional estimates in the new exchange format (ToR a) and generate a variety of input files input into stock assessment models (ToR b), making increasing use of the wider statistical potential the RDBES now offers. To secure transparency and reproducibility of stock coordination this process will also be included in TAF.</p> <p>WGRDBES-StockCoord will develop a set of R functions to carry out stock coordination procedures like InterCatch but that incorporate novel aspects made possible by the RCEF format. The functions will have as a starting point the new exchange format and as an endpoint the file formats accepted by the main stock assessment models used in ICES AWGs. Improvements to InterCatch procedures and alternative procedures will also be considered.</p>			
c	Coordinate the peer review and inclusion of ToR a) outputs in the RDBES packages.	Worldwide availability and code and methodological peer review of RDBES functions are achieved by incorporating them in an R package published on a public GitHub repository	3.1, 3.2, 3.3	Regular activity every year with intersessional work.	RDBESstockCoord published in ICES GitHub alongside associated documentation and vignettes.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		(https://github.com/ices-tools-dev/) .			
d	Establish a road forward to the development of code and procedures used in ICES stock coordination.	As the work of WGRDBES-StockCoord progresses there is a need to inform WGRDBESGOV on the degree of readiness of RDBESstockCoord and the best path forward to further develop and implement it making use of the potential offered by RDBES and the new RCEF format.	3.1, 3.2, 3.3	Regular activity every year.	List of recommendations to WGRDBESGOV on aspects needing consideration in terms of stock coordination.
e	Collaborate with WGRDBESGOV and WGTAFGOV to secure the integration of outputs from WGRDBES-StockCoord in TAF.	Transparency on the use of outputs from WGRDBES-StockCoord can be achieved by integrating the estimation scripts and/or their outputs in TAF.	3.1, 3.2, 3.3	Regular activity every year.	Evaluation of whether outputs and processes from WGRDBES-StockCoord are fit and ready for integration within TAF.

Summary of the work plan

Year 1	<p>ToR a) Discuss the new national/regional exchange format suggested by WGRDBESGOV. Suggest changes to data model specifications where needed.</p> <p>ToR b) Identify the R-code needed in the RDBESstockCoord package. Start developing that code.</p> <p>ToR c) Integrate a first set of R-functions in RDBESstockCoord. Discuss where the package should be hosted. Ponder the possibility of setting up the R-package in CRAN requirements.</p> <p>ToR d) Evaluate progress achieved and suggest a way forward to WGRDBESGOV with regard to stock coordination.</p> <p>ToR e) Collaborate with WGRDBESGOV (and relevant groups thereunder) and WGTAFGOV to identify requirements for integration of WGRDBES-EST outputs into TAF.</p>
Year 2	[text]
Year 3	[text]

Supporting information

Priority	This working group is considered of very high priority. The activities of this WG will promote the development of a Regional Database and Estimation System (RDBES) by developing the algorithms and code required for the stock coordination of commercial catches used by ICES AWGs. The RDBES will be integrated into TAF allowing ready
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	access to national/regional estimates, stock coordination scripts, and final inputs supplied to assessment models resulting in the production of higher-quality, transparent estimates as required by ICES Fisheries Advice.
Resource requirements	Participation of the ICES Data Centre is needed with regards to details of current InterCatch stock coordination routines and data formats currently in use as inputs to ICES stock assessment models.
Participants	The WG is expected to be attended by about 20 members. Participants should be proficient in writing their scripts and functions in R language and/or be experienced in building R packages and/or have good knowledge of current stock coordination done for ICES stocks.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory and science committees	There are no direct linkages with ACOM, but most of the Stock Assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other groups	There is a direct link to WGRDBESGOV, the RDBES core group and close links to activities of WGTAFGOV, WGQUALITY, and WGCATCH. There is an indirect link with WGRFS and WGBIOP.
Linkages to other organizations	The RDBES estimates are connected to regional data collection defined by the RCGs under the European Commission. The RDBES will also support the ICES countries in providing data for both national and international assessments and optimizing their sampling programmes. In the case of EU MS, the RDBES is expected to facilitate and improve the quality of provision of commercial catch data requested under different data calls.

Resolutions approved in 2022

WGFAST – Working Group on Fisheries Acoustics, Science, and Technology

2022/MT/DSTSG01 The Working Group on Fisheries Acoustics, Science, and Technology (WGFAST), chaired by Anne Lebourges-Dhaussy, France, will work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	31 March 2023, Portland, Maine, United States	E-evaluation and interim report by end April 2023 to DSTSG	
Year 2024	8–12 April 2024, Brest, France	E-evaluation and interim report by end April 2024 to DSTSG	
Year 2025	00–00 month 2025, [VENUE]	E-evaluation and final report by 30 May 2025 to DSTSG, ACOM, and SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Collate information on acoustic related research and surveys, and interactions with	a) Science Requirements b) Advisory Requirements A summary of the	3.1, 3.2, 4.1	3	Tables providing members of the ICES community with data and information about

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	ecosystem and assessment expert groups.	information will be presented in the final report.			operational acoustic surveys and research, and connections among WGs.
b	Review presented recent work within the topics: “Acoustic methods to characterize populations, ecosystems, habitat, and behaviour”; “Acoustic characterization of marine organisms”; and “Emerging technologies, methodologies, and protocols”. Provide guidance by identifying: (1) where training opportunities could be developed; and (2) gaps in knowledge and challenges that should be prioritized by the community.	Create a venue for informing the group members on recent activities and seeking input to further development. An overview of the different contributions and guidance will be presented in the annual reports. Year 1 will be part of ToR 3 (symposium)	4.2, 4.3, 4.4	2, 3	Collated abstracts describing the state-of-the-art research by members of WGFAS T provided in the annual (e-evaluation) reports.
c	Promote data dissemination within ICES acoustic survey group and beyond by developing and maintaining standardized and open acoustic data and metadata conventions (e.g. SONAR-netCDF4 and Ac-META data conventions) and maintain a list/overview of open source data processing tools.	This ToR fills the need to develop and maintain open data conventions and guidelines for acoustic data to be accessible and available to the broader scientific community. These conventions require coordination with sonar manufacturers, software developers, and the scientific community to implement acoustic data conventions and establish standard processing chains from raw data to interpreted data using automation.	3.1, 3.3, 4.2	1, 2, 3	<ul style="list-style-type: none"> i. Updated metadata convention publication on ICES Library Publication GitHub repository. ii. Updated SONAR-netCDF4 convention publication that includes echosounder data on ICES Library Publication GitHub repository. iii. Updated list of open-source efforts on WGFAS T GitHub site.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
d	Review the state-of-the-art in monitoring offshore wind development areas using advanced instrumentation and platforms.	A theme session will be organized as part of the Fisheries Acoustics Symposium (ToRd) dedicated to monitoring offshore wind development (i.e. offshore wind farms) using advanced acoustic instrumentation (e.g. wideband echosounders and sonars) and remotely-operated and autonomous platforms. A keynote speaker will be selected to address scientific and sociological impacts of offshore wind.	2.1, 3.1, 3.2	1	Selected papers from this theme session will be published as part of the symposium proceedings in the ICES Journal of Marine Science.
e	Collate resources that document operational settings, parameters, and characteristics of echosounders and sonars used during fisheries acoustic's surveys and research.	Marine mammal interactions, marine protected areas, environmental impact statements interactions will require permitting of echosounders and sonars. More countries are requiring scientific acoustic instrumentation to have permits or environmental impact evaluations. WGFAST will develop guidelines to assist with generating the required information needed for operational permits.	2.1, 3.1, 4.1	3	Report that will reside on the ICES Library Publication GitHub repository.
f	Review the underwater-acoustics terminology used by the WGFAST community and how it relates to international standards.	The underwater-acoustics terminology used by the WGFAST community has evolved somewhat separately to international standards. WGFAST will evaluate adoption of a	3.2, 3.5, 4.2	3	Recommendations provided in the WGFAST science report.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		common language, which can facilitate communication among instrument manufacturers, software developers, and data scientists, provide accurate comprehension of the data, and promote utility of the data for resource conservation.			
g	Collate information on acoustic related research and surveys, and interactions with ecosystem and assessment expert groups.	a) Science Requirements b) Advisory Requirements A summary of the information will be presented in the final report.	3.1, 3.2, 4.1	3	Tables providing members of the ICES community with data and information about operational acoustic surveys and research, and connections among WGs.

Summary of the work plan

Year 1	<ul style="list-style-type: none"> • Convene an international symposium. • Produce an annual overview of recent developments within the field. • Maintain a metadata convention, open-source data formats, and a comprehensive list of open-source data processing and analysis efforts.
Year 2	<ul style="list-style-type: none"> • Produce a symposium proceedings. • Produce an annual overview of recent developments within the field. • Maintain a metadata convention, open-source data formats, and a comprehensive list of open-source data processing and analysis efforts.
Year 3	<ul style="list-style-type: none"> • Produce the annual overview of recent developments within the field. • Collate information on acoustic related research and surveys. • Maintain a metadata convention, open-source data formats, and a comprehensive list of open-source data processing and analysis efforts. • Produce reports that document and review operational setting, parameters, and characteristics of echosounders and sonars, and underwater acoustic symbols and definitions.

Supporting information

Priority	Fisheries acoustics and complementary technologies provide the necessary tools and methods to implement the ecosystem approach to fisheries management within ICES, and research into their application and further development is vital.
Resource requirements	No new resources will be required for annual meetings and operations.
Participants	The Group is normally attended by some 60–100 members and guests.
Secretariat facilities	None.
Financial	No financial implications.

Linkages to advisory and science committees	Stock assessment groups using acoustic abundance indices.
Linkages to other groups	The work in this group is closely aligned with complementary work in the FTFB Working Group. The work is of direct relevance to a number of data collection and coordination groups within EOSG (e.g. WGIPS, WGBIFS, WGACEGG, WGIDEEPS) and HAPISG (e.g. WGORE, WGOWDF), and to advanced statistical and analytical methods (e.g. WGMLEARN).
Linkages to other organizations	The work of this group is closely aligned with similar work in FAO, the Acoustical Society of America, the South Pacific Regional Fisheries Management Organization, the Western Indian Ocean Marine Science Association, the Commission for the Conservation of Antarctic Marine Living Resources, and the American Fisheries Society.

WGDG – Working Group on DATRAS Governance

2022/MT/DSTSG02 The **Working Group on DATRAS Governance (WGDG)**, chaired by Ingeborg de Boois, Netherlands, will meet online four times a year to work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	1) 6 February 2) 9 May 3) 28 June 4) 28 September	E-evaluation by TBD to DSTSG	
Year 2024	1) 00 February 2) 00 May 3) 00 June 4) 00 September	E-evaluation by TBD to DSTSG	
Year 2025	1) 00 February 2) 00 May 3) 00 June 4) 00 September	E-evaluation and final report by TBD to DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Advise on recommendations and requests from expert groups (submitters and end-users) related to DATRAS.	Centralized discussion on recommendations and requests is crucial to prevent redundancy and stimulate alignment over data submission and data products.	3.2, 4.1, 4.2	All years	Formal responses in the recommendations database, and more in detail directly to the requesting group(s). Progress technical issues at https://github.com/ices-eg/WGDG final reporting of considerations in annual WGDG report.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
b	Make information on DATRAS easily available and accessible for data submitters as well as end-users.	The current information on DATRAS is scattered. Collating it in a logical manner into a quality document will support maintenance of information and understanding of the data in DATRAS.	3.2, 4.1, 4.2	(1) Year 1 and 2: drafting and review, year 3: finalization (2) Year 1	(1) DATRAS User handbook (final in year 3) Updated webpage with better structured content (year 1)
c	Provide insight in changes in the re-submitted data and products in DATRAS	For end-users and data submitters it is crucial to understand differences in outcomes compared to previous analyses. The current system does not provide sufficient opportunity to do that in a user friendly manner.	3.2, 4.1, 4.2	All years	Updated webpage (year 1); Updated registration of changes in resubmitted data (year 2/3).

Summary of the work plan

Year 1	<ul style="list-style-type: none"> • Work on all ToRs in three to four 1.5 hour online meetings and intersessionally. • Provide oral report to data science and technology steering group (DSTSG).
Year 2	<ul style="list-style-type: none"> • Work on all ToRs in three to four 1.5 hour online meetings and intersessionally. • Provide oral report to data science and technology steering group (DSTSG).
Year 3	<ul style="list-style-type: none"> • Work on all ToRs in three to four 1.5 hour online meetings and intersessionally. • Provide oral report to data science and technology steering group (DSTSG).

Supporting information

Priority	High. WGDG is crucial in the alignment of DATRAS for different surveys, and to form the communication channel between ICES DATRAS team, survey coordination groups and data end-users. These tasks are well aligned with ICES strategic plan to continue to build our capacity and expertise in managing, analysing, and interpreting data to support science and advice.
Resource requirements	A commitment of time from the members of the group consistent with progressing actions identified in the meetings.
Participants	Members of ICES Data Centre involved in DATRAS developments, chair with a direct link with (=participating in) DIG, representatives of survey groups submitting data to DATRAS (currently WGBIFS, IBTSWG, WGBEAM).
Secretariat facilities	Community Sharepoint site, Remote meeting facilities.
Financial	No financial implications.
Linkages to advisory and science committees	ACOM groups form an important part of the DATRAS end-user population.

Linkages to other groups	There is a very close working relationship with the fish trawl survey groups (data submission), and all groups using DATRAS data, i.e. fish stock assessment groups, and WGML. There is a strong linkage to DIG as the main umbrella for data/software governance structures.
Linkages to other organizations	No.

WGGRF – Working Group on Greening the Research Fleet

2022/MT/DSTSG03 The **Working Group on Greening the Research Fleet (WGGRF)**, chaired by Aodhan Fitzgerald, Ireland, and Christian Freudinger, Germany, will work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	1) 3 May 2023, online meeting 2) 00–00 October 2023, Bremerhaven, Germany	E-evaluation by December 2023 to DSTSG	1) Kick-off meeting 2) Visit to RV Uthörn (100% methanol)
Year 2024	1) 28 May 2024, online meeting 2) 00 November 2024 online meeting	E-evaluation by December 2024 to DSTSG	1) Online meeting 2) Follow-up and prep 2025
Year 2025	00–00 October 2025, Galway, Ireland	E-evaluation and final report by 20 December 2025 to DSTSG, ACOM, SCICOM	Green Research Fleet meeting (possibly joint with IRSO)

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Review and report on selected international operating research vessels (case studies from ICES Member Countries) and their environmental impact including reporting on consumption and emissions and a review of renewal profile of the fleet.	General Assessment of the current status of the selected relevant RV's in terms of environmental impact: including GHG emissions, emissions to water, noise etc. Assessment of the age and replacement/renewal status of the selected fleet to assess future status of fleet. Link with relevant WGs.	3.3, 4.1, 6.4	2 years	Overview table of status of fleet. Report on “how to assess emissions of a vessel”. Respond to advice requests, as applicable.
b	Review of IMO and other regulations	a) Short overview on relevant	6.4	2 years	Report or technical paper. Respond to

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	and their legal relevance for operation of research vessels.	international regulations d) identify relevant gaps in the regulations for RV e) identify regulations that are particularly difficult.			advice requests, as applicable.
c	Draft a voluntary agreement between research vessel operators in terms of environmentally sustainable operations.	Invite ICES community to review this draft.	6.4	2 years	Draft to ICES.
d	Identify and publish best practise and general recommendations for new builds and refit of research vessels.	Based on an assessment of fleet status , emerging technologies and relevant legislation.	3.3, 4.1,4.4	3 years	Technical paper or peer-reviewed manuscript, posters, conference.
e	Identify best practise and general recommendations for the low-emission operation of research vessels and as a platform for autonomous systems.	Based on dialogue with operators from RV and other sectors and industry as well as relevant legislation.	3.3, 4.1,4.4	3 years	Technical paper or peer-reviewed manuscript, posters, conference.
f	Organize a final event (Workshop, conference, session; maybe joint with IRSO 2025)	Present findings of WG output and review with international vessel operators for discussion and implementation.	3.3, 4.1,4.4	2 years	Meeting report.

Summary of the work plan

Year 1	<ul style="list-style-type: none"> Working on all ToRs; special focus on ToRs a and b.
Year 2	<ul style="list-style-type: none"> Working on all ToRs; special focus on ToRs a, b, c, d, e, and f.
Year 3	<ul style="list-style-type: none"> Working on ToRs d, r, f. Finalize and report on all ToRs.

Supporting information

Priority	The proposed terms of reference addresses important questions for emerging techniques and technologies for designing, building, and operating research vessels in a way to reduce environmental impact, with emphasis on emissions. This topic will bring together a range of experts from the ICES community as well as operational experts that are not as frequent members of the community currently. Through reviewing current practises and emissions and developing best practises for the design of new vessels and methods for incorporating new technologies, WGGRF will support the ambition of ICES on developing science that informs and support emissions reduction, making the group's work a 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 is normally attended by some 20–25 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory and science committees	There are no obvious direct linkages.
Linkages to other groups	There is a very close working relationship with all the groups in DSTSG. Relevant standards for noise profiles which have been adopted by the sector have been developed in WGFAST. The group will report to DSTSG as well.
Linkages to other organizations	International Research Ship Operators (IRSO), European Research Vessel Operator (ERVO), Global Ocean Observing System (GOOS), Partnership for Observation of the Global Ocean (POGO), EUROFLEETS and IMO.

WG BIOPTIM – Working Group on Optimization of Biological Sampling

2022/MT/DSTSG08 The **Working Group on Governance of the Regional Database & Estimation System (WGRDBESGOV)**, chaired by Els Torreele, Belgium, and Lucia Zarauz, Spain, will work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	20–24 November 2023, ICES HQ, Copenhagen, Denmark	E-evaluation and interim report by 1 March 2024 to DSTSG	
Year 2024	25–29 November 2024, ICES HQ, Copenhagen, Denmark	E-evaluation and interim report by 1 March 2025 to DSTSG	
Year 2025	00–00 month 2026, [VENUE]	E-evaluation and final report by 18 December 2026 to DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Continue the development and testing of the optimization methods included in the main R-tools developed under	Specific resolutions to the continuation of the work developed under the workshops on optimization of biological sampling	3.1, 3.2, 3.3	3 years/ Generic ToR	

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	the BIOPTIM work (WKBIOPTIM 1 -4).	from 2017 until 2021.			
b	Compile the guidelines on the application of the different R-tools according to the different objectives and data.	Specific resolutions to produce documentation to help end-users from the different institutes on the application of the main methods R-tools including the specifications on data requirements and on outputs from sampling design optimization.	3.2	3 years/ Generic ToR	
c	Preparation of a R-package with the related indicators.	In the different optimization methods specific indicators to access the optimal sampling level are included. A R-package with the different indicators will make them available to a wider use across the optimization methods.	3.2, 3.3, 4.1	3 years/ Generic ToR	R-package
d	Implement the existing R-tools (WKBIOPTIM 1 -4), into an R-package with documentation for a wider application.	As a product in which all the R-tools will be compile and make available to allow a wider application of the different optimization methods.	3.2, 3.3, 4.1	3 years/ Generic ToR	R-package
e	Adapt the main R-tools to accommodate the different sampling design schemes (e.g. hierarchies from RDBES).	The way sampling data are collected have already been described in the different hierarchies defined in the RDBES. Since the BIOPTIM R-tools use standard data formats from the regional databases, the main sampling schemes should be considered.	3.2, 3.3	3 years/ Generic ToR	
f	Provide a platform for end-user feedback on the establishing methods prioritization of work on the R-	The feedback platform will run in GitHub. All feedback will be converted to an	3.1, 4.1	3 years/ Generic ToR	

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	packages/code. User feedback will be requested from the end-users via the GitHub site and by e-mail. Feedback will be compiled by WGBIOPTIM and appropriate actions to be taken with assigned responsibilities will be listed and prioritized.	issue on the working group GitHub site, assigned priorities, assignees, labels for various R-tools, effort and milestones for completion.			
g	Provide support on the use and application of the main R-tools with the aim of a sampling optimization at national/stock/regional levels.		3.2, 3.3	3 years/ Generic ToR	

Summary of the work plan

Year 1	<ul style="list-style-type: none"> All ToRs.
Year 2	<ul style="list-style-type: none"> All ToRs.
Year 3	<ul style="list-style-type: none"> All ToRs.

Supporting information

Priority	This working group is considered to have a high priority for already established and new commercial fishery and survey sampling programmes developed under the EU-MAP, or for any fisheries data collection schemes with similar scope, such as surveys or recreational fisheries.
Scientific justification	<p>Statistical sound sampling is very important, if not essential to any sampling scheme. One important component of a “statistically sound design” is that sampling effort is optimized and fit for purpose, i.e. that time and costs spent in sampling can be effectively justified in terms of quality of the information finally provided to end-users.</p> <p>The Workshops on Optimization of Biological Sampling (WKBIOPTIM 1, 2, 3, and 4) developed, improved and tested a set of R-scripts (mostly based on the RBD exchange format) producing a range of statistical and graphical outputs to be used for discussion of appropriate levels of biological sampling of different stocks. This working group aims to consolidate the new knowledge from those workshops into tools and start development on further analyses.</p>
Resource requirements	No additional ICES resources required.
Participants	The Working Group is expected to attract wide interest from those involved in WGCATCH and WGBIOP and should include a subset of participants familiar with R-coding to the level of “loop coding” and “function building” and a subset of participants experienced in age and reproduction analysis. In view of its relevance to data collection within ICES, the EU-MAP and regional sampling designs, it should include those involved in the annual planning of sampling and laboratory analysis.

	Members of survey groups located under DSTSG should also be among the participants.
Secretariat facilities	Secretariat support.
Financial	Member States may fund this through their EMFF programme.
Linkages to advisory and science committees	ACOM.
Linkages to other groups	SCICOM, WGCATCH, WGBIOP, WGQUALITY, DSTSG, Survey WGs (IBTS, IBAS, etc.)
Linkages to other organizations	RCGs, GFCM.

WGSFDGOV – Working Group on Spatial Fisheries Data Governance

2022/MT/DSTSG09 The **Working Group on Spatial Fisheries Data Governance (WGSFDGOV)**, chaired by Roi Martinez, UK, will meet online four times a year to work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	1) 23 March 2) 30 June 3) 5 October 4) 14 December	E-evaluation and interim report by TBD to DIG and DSTSG	
Year 2024	1) 00 2) 00 3) 00 4) 00	E-evaluation and interim report by TBD to DIG and DSTSG	New chair : Roi Martinez, UK.
Year 2025	1) 00 2) 00 3) 00 4) 00	E-evaluation and final report by TBD to DIG, DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Establish a governance framework setting out a forward looking plan, including objectives of the VMS and Logbook DB, responsibilities, processes and resources.	WGSFDGOV will oversee the relevant processes and support the ICES Secretariat, the ICES Data Centre and WGSFD so that the aims as defined in the WGSFDGov Manifesto can be achieved.	3.5, 3.2, 4.2	3 years/ Generic ToR	The WGSFDGOV manifesto is the basis for overarching short to medium term goals, guidelines on how to prioritize, and definition of resources available, including responsibilities

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
b	Advise on sufficient protection of ICES data products and the underlying VMS and Logbook DB	All VMS and related logbook data held at ICES databases, as well as the corresponding data products will not compromise the protection of personal and commercial data of the fisheries from which the data originate.	3.5, 3.2, 4.2	3 years/ Generic ToR	A review of the existing rules (including the 3-vessel rule) for working groups and the sector secretariat, to achieve confirmation that the rules and laws, in particular the EU GDPR for data protection, are being complied with.
c	Ensure reliability of ICES data products originating in the VMS and Logbook DB	The output of the respective ICES databases that form the basis of ICES advice will be reliable regarding data quality by conducting sufficient and effective quality checks.	3.5, 3.2, 4.2	3 years/ Generic ToR	
d	Rationalize data needs and provide guidance for data submitters.	<p>Review the spatial fisheries data calls and submissions to (a) rationalize the data needs; (b) provide easy and understandable guidance for those that have to answer the calls and submit data.</p> <p>Oversee and advise on the interpretation and prioritization of recommendations and requests addressed to the VMS and Logbook DB.</p> <p>This can only be successfully implemented when resource requirements have been estimated and the availability of resources is known.</p>	3.5, 3.2	3 years/ Generic ToR	<p>Provide an annual workplan, with an agreed and prioritized list of VMS DB related EG and Logbook DB recommendations along with suggested resource allocations, budget estimates and feasibility estimates.</p> <p>Provide a platform (GitHub site) for user feedback to the VMS DB.</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
e	Oversee development of data submitter guidance and training for VMS and Logbook DB.	Data submitters require various levels of training including step by step user manuals, tutorials and workshops. Maintenance of documentation of guidelines and procedures will also be necessary.	3.5, 3.2	3 years/ Generic ToR	Annually updated training documentation and workflow. Workshops with specific goals proposed and planned where necessary.

Summary of the work plan

Year 1	<ul style="list-style-type: none"> First meeting will be used to initiate the work on ToR b). The activities for the ToRs c) to e) will be planned and continued in the other quarterly Webex meetings, based on the further development and results of ToR a).
Year 2	<ul style="list-style-type: none"> Guided by ToR a), including its continuous review, ToRs c) to e) will be addressed in quarterly online meetings.
Year 3	<ul style="list-style-type: none"> Guided by ToR a), including its continuous review, ToRs c) to e) will be addressed in quarterly online meetings.

Supporting information

Priority	High priority.
Resource requirements	A commitment of time from the members of the group consistent with progressing actions identified in the quarterly meetings.
Participants	DIG and WGSFD representatives, one member each representing data submission, data policy and data use. ICES Secretariat and other related EG members as need be.
Secretariat facilities	Standard (Sharepoint site, remote meeting facilities).
Financial	No financial implications.
Linkages to advisory and science committees	This database is an integral component of many groups and products created by ICES EGs, such as Fisheries overviews, WKTRADE, WGBEDPRES, etc.
Linkages to other groups	There is a strong linkage to WGSFD as the group which has coordinated the VMS and logbook data call and quality control of data submissions and products. There is also a strong linkage to DIG as the main umbrella for data/software governance structures.
Linkages to other organizations	RCG, NAFO.

WKEMSIP – SCAR-Fish/ICES/EFARO Workshop on Enabling Mechanisms for Science-Industry Partnerships to inform the Ecosystem Approach⁴

2022/WK/DSTSG10 The SCAR-Fish/ICES/EFARO Workshop on Enabling Mechanisms for Science-Industry Partnerships to inform the Ecosystem Approach (WKEMSIP), chaired by Aida Campos, Portugal and Hans Polet, Belgium, will be established and meet TBD to:

- a) Review and consider recent research and practical examples of good practices and lessons learned in science-industry partnerships on industry based data collection; ([Science Plan codes: 3.5, 3.6, 4.2, 4.6](#));
- b) Identify enabling mechanisms for cooperation and benefits of science-industry partnerships on industry based data collection for science and industry ([Science Plan codes: 3.5, 3.6, 4.2, 4.6](#));
- c) Identify research gaps which would address the needs in utilizing fishery-dependent data to underpin the Ecosystem based Approach to Fisheries management ([Science Plan codes: 3.5, 3.6, 4.2, 4.6](#)).

WKEMSIP will report by TBD 2025 for the attention of DSTSG, ACOM, and SCICOM.

Supporting information

Priority	Science-industry partnerships to develop, implement and use data collected by the fishing industry are increasing mutual trust between scientists and fishers. The data supports the scientific understanding of the dynamics of living resources, impacts on other ecosystem components and effects of environmental change on productivity and distribution of fish stocks. The data can benefit research as well as the fishing industry.
Scientific justification	<p>Term of Reference a)</p> <p>Science-Industry partnerships to enhance data collection and analysis have been carried out in partnership with national institutes as well as through EU funded projects. Lessons learned will help to inform future cooperations, strengthen and further develop existing partnerships.</p> <p>Term of Reference b)</p> <p>Identifying enabling mechanisms will help to support and strengthen new and existing partnerships and help identifying further research and development needs as well as areas to support further innovations (social and technical)</p> <p>Term of Reference c)</p> <p>Identifying gap areas for research will be an important output which can be utilized by SCAR-fish to inform DG research Funded research supporting actions.</p>
Resource requirements	Each participant of the working group is expected to provide their own travel resources, however, with the expectation of needing to host a hybrid meeting (virtual and in-person), ICES may need to provide some resources to allow for remote participants.
Participants	The workshop aims for 25–35 participants.
Secretariat facilities	Meeting room and hybrid meeting facility.
Financial	No financial implications.
Linkages to advisory and science committees	The outcomes of the workshop might be relevant to future advice development.

⁴ This workshop is currently on hold.

Linkages to other groups	SCICOM, EOSG, DSTSG, WGTIFD, WGSFD, WGSFD-Gov, WKEVUT, WKEnsure.
Linkages to other organizations	Advisory Councils, RFMOS, national data fisheries data collection, EC DG Research, SCAR-fish, DG Env, EUFA.

WGRDBESGOV – Working Group on Governance of the Regional Database & Estimation System

2022/MT/DSTSG11 The **Working Group on Governance of the Regional Database & Estimation System** (WGRDBESGOV), chaired by Els Torreele, Belgium, and Lucia Zarauz, Spain, will work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	20–24 November 2023, ICES HQ, Copenhagen, Denmark	E-evaluation and interim report by 1 March 2024 to DSTSG	
Year 2024	25–29 November 2024, ICES HQ, Copenhagen, Denmark	E-evaluation and interim report by 1 March 2025 to DSTSG	Three-year period ends for chairs.
Year 2025	00–00 month 2025, ICES HQ, Copenhagen, Denmark	E-evaluation and final report by TBD to DSTSG, ACOM, SCICOM	New chairs : TBD and TBD; Previous chairs : Els Torreele and Lucia Zarauz, Spain

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Follow-up the status of the development of the Regional Database & Estimation System (RDBES) and its project plan for implementation, including the funding of the outstanding development. Adjust the project plan as required. Oversee and advise on the interpretation and prioritization of recommendations for the RDBES development. Identify user guidance and training required for RDBES users.	The Regional Database & Estimation System (RDBES) will be extensively used by ICES member states, the EU Regional Coordination Groups, and ICES expert groups to store detailed commercial fisheries sample data. The RDBES will replace the current ICES InterCatch system and will become a database and estimation system for ICES Fisheries Advice. The RDBES is therefore a key development to support the ICES advisory process.	3.1, 3.2, 3.3	3 years	An up-to-date roadmap for the Regional Database & Estimation System (RDBES) developments describing when functionality will be available. The RDBES project plan is monitored and fulfilled. Recommendations for relevant workshops are made.
b	Provide a platform for feedback to the Regional Database	The Regional Database & Estimation System (RDBES)	3.1, 3.2, 3.3	3 years / generic ToR	A public Regional Database & Estimation System

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	<p>& Estimation System (RDBES). Liaise with the ICES EGs, (incl. workshops) and RCG using and supporting the RDBES. Appropriate actions to be taken with assigned responsibilities in cooperation with the FRSG chair and the ACOM chair, and resource requirements will be listed and prioritized.</p> <p>Establish and follow-up the required subgroups (ISSGs including the existing “Core group”), created in support of the functioning and use of the RDBES.</p>	<p>should develop to meet the requirements of a broad range of users and needs to be responsive to user feedback.</p>			<p>(RDBES) GitHub site is maintained - this makes the data model available, and provides a platform for users to raise and discuss issues.</p> <p>ISSG (such as the existing “Core group”) complete any required tasks (e.g. refining specifications and answering user queries)</p> <p>Recommendations from users are responded to.</p>
c	<p>Oversee and summarize how the Regional Database (RDB) and the new Regional Database & Estimation System (RDBES) are used in the EU Regional Coordination Groups (RCGs), and ICES expert groups, along with any other uses. Where possible, share any outputs with other interested groups and users.</p>	<p>The aims of the new Regional Database & Estimation System (RDBES) include increasing the awareness of fisheries data collected by the users of the RDBES and the overall usage of these data.</p> <p>Therefore it is important to monitor how different users are using the data.</p>	3.1, 3.2, 3.3	3 years / generic ToR	<p>Summaries of the existing commercial fisheries Regional Database (RDB) and the new Regional Database & Estimation System (RDBES) data calls are published annually.</p> <p>Summaries of the use of RDB/RDBES data are published annually.</p>
d	<p>Review the data licence and data policy of the Regional Database & Estimation System (RDBES)</p>	<p>The Regional Database & Estimation System (RDBES) is intended to host data from multiple ICES Member Countries and EU member states. Different users will have different permissions (depending on their needs).</p>	3.1, 3.2, 3.3	3 years / generic ToR	<p>Appropriate Regional Database & Estimation System (RDBES) data licence and governance policies are agreed and implemented</p>

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		Data license and governance of the RDBES is therefore a key topic to ensure that it can function in a secure and efficient manner.			

Summary of the work plan

Year 1	<p>An annual meeting will be held, as well as any intersessional work required, to work on the ToRs.</p> <p>ToR a)</p> <ul style="list-style-type: none"> • Review the Regional Database & Estimation System (RDBES) project plan. • Review feedback summaries from RCGS, RDBES workshops (e.g. WKRDBES-INTRO, WGRDB-EST, WKRDBES-RAISETAF) and supporting WGs (ex WGCATCH, WGBIOP) • Review results and feedback from the RDBES data call. • Adjust the project plan as required. <p>ToR b)</p> <ul style="list-style-type: none"> • Information on the public RDBES GitHub (https://github.com/ices-tools-dev/RDBES) site is kept up-to-date • Issues raised on the GitHub site are responded to in a timely manner • The required ISSGs (incl the 'Core Group' meet as required to work effectively. <p>ToR c)</p> <ul style="list-style-type: none"> • Review and summarize responses to the RDBES data calls • Determine which groups have used RDBES data during the year and, where possible, view any of their outputs based on RDBES data. • Review any feedback arising from those groups. • Ensure data licence and governance policies are being adhered to during data use. • Where possible, share outputs and code from the different users of RDBES data <p>ToR d)</p> <ul style="list-style-type: none"> • Agree to a RDBES data license and data policy • Make any further changes required to the RDBES data governance policies and procedures • Ensure data governance will be suitable for using RDBES data within ICES stock assessment
Year 2	<p>An annual meeting will be held, as well as any intersessional work required, to work on the ToRs.</p> <p>ToR a)</p> <ul style="list-style-type: none"> • Review the Regional Database & Estimation System (RDBES) project plan. • Review feedback summaries from RCGS, RDBES workshops (e.g. WKRDBES-INTRO, WGRDB-EST, WKRDBES-RAISETAF) and supporting WGs (ex WGCATCH, WGBIOP) • Review results and feedback from the RDBES data call. • Adjust the project plan as required. <p>ToR b)</p> <ul style="list-style-type: none"> • Information on the public RDBES GitHub (https://github.com/ices-tools-dev/RDBES) site is kept up-to-date • Issues raised on the GitHub site are responded to in a timely manner • The required ISSGs (incl the 'Core Group' meet as required to work effectively. <p>ToR c)</p> <ul style="list-style-type: none"> • Review and summarize responses to the RDBES data calls

	<ul style="list-style-type: none"> • Determine which groups have used RDBES data during the year and, where possible, view any of their outputs based on RDBES data. • Review any feedback arising from those groups. • Ensure data licence and governance policies are being adhered to during data use. • Where possible, share outputs and code from the different users of RDBES data
ToR d)	<ul style="list-style-type: none"> • Agree to a RDBES data license and data policy • Make any further changes required to the RDBES data governance policies and procedures • Ensure data governance will be suitable for using RDBES data within ICES stock assessment

Year 3	An annual meeting will be held, as well as any intersessional work required, to work on the ToRs.
ToR a)	<ul style="list-style-type: none"> • Review the Regional Database & Estimation System (RDBES) project plan. • Review feedback summaries from RCGS, RDBES workshops (e.g. WKRDBES-INTRO, WGRDB-EST, WKRDBES-RAISETAF) and supporting WGs (ex WGCATCH, WGBIOP) • Review results and feedback from the RDBES data call. • Adjust the project plan as required.
ToR b)	<ul style="list-style-type: none"> • Information on the public RDBES GitHub (https://github.com/ices-tools-dev/RDBES) site is kept up-to-date • Issues raised on the GitHub site are responded to in a timely manner • The required ISSGs (incl the 'Core Group' meet as required to work effectively.
ToR c)	<ul style="list-style-type: none"> • Review and summarize responses to the RDBES data calls • Determine which groups have used RDBES data during the year and, where possible, view any of their outputs based on RDBES data. • Review any feedback arising from those groups. • Ensure data licence and governance policies are being adhered to during data use. • Where possible, share outputs and code from the different users of RDBES data
ToR d)	<ul style="list-style-type: none"> • Agree to a RDBES data license and data policy • Make any further changes required to the RDBES data governance policies and procedures • Ensure data governance will be suitable for using RDBES data within ICES stock assessment

Supporting information

Priority	The activities of this group will ensure the development, the use of the Regional Database and Estimation System, RDBES. The RDBES will be the database for the Baltic Sea, North Sea & Eastern Arctic, North Atlantic and Long-Distance Fisheries Regional Coordination Groups (RCGs). The RDBES will replace the current ICES InterCatch system so it will become the database and estimation system for ICES Fisheries Advice. Consequently, these activities are considered to have a high priority.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. Countries are encouraged to ensure that their national members have sufficient resources to conduct the necessary intersessional work to address the ToRs. For EU Member States, work within this WG can be funded under the Data Collection Framework (DCF)/European Maritime, Fisheries and Aquaculture Fund (EMFAF).
Participants	The Group is normally attended by some 20–25 members and guests.
Secretariat facilities	SharePoint and meeting room requirement.

Financial	No financial implications.
Linkages to advisory and science committees	The stock assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other groups	There is a strong thematic link with groups including WGCATCH and WGBIOP. Since the RDBES will interact with the ICES Transparent Assessment Framework (TAF) there is also a close link with WGTAFGOV. It will also be relevant to other data governance groups under the new Data Science and Technology Steering Group (DSTSG).
Linkages to other organizations	The RDBES will support the work of the EU Regional Coordination Groups (RCGs).

WGAcousticGov – Working Group on Acoustic Trawl Data Portal Governance

2022/MT/DSTSG13 The **Working Group on Acoustic Trawl Data Portal Governance** (WGAcousticGov), chaired by Elor Sepp, Estonia, will meet online four times per year to work on ToRs and generate deliverables as listed in the table below. WGAcousticGov will report on its activities by the March ACOM and SCICOM meetings in the form of a business report the following year to EOSG and WGFAST.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	1) 22 May 2) 27 September 3) 19 December	E-evaluation by TBD 2023 to DSTSG	
Year 2024	1) 00 February 2) 00 May 3) 00 September 4) 00 November	E-evaluation by TBD 2024 to DSTSG	
Year 2025	1) 00 February 2) 00 May 3) 00 September 4) 00 November	E-evaluation and final report by TBD 2025 to DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Maintain and enhance the existing governance platform for end-user feedback to the the Acoustic Trawl Data Portal	A governance platform has been established and requires ongoing review and enhancement to meet user needs, provide feedback and allow for the prioritization of tasks within the Acoustic Trawl Data Portal	3.2, 4.1, 4.2	3 years/ Generic ToR	A transparent record of user issues, the process of address and implementation.

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
b	Coordinate and advise on the interpretation and prioritization of recommendations and requests addressed to the Acoustic Trawl Data Portal.	Quarterly meeting cycle required to be reactive to user needs and to operate effectively given the available resources within the ICES Datacentre.	3.2, 4.1, 4.2	3 years/ Generic ToR	Prioritized list of issues and recommendations
c	Coordinate the development of user guidance and training for the Acoustic Trawl Data Portal.	As the Acoustic Trawl Data Portal develops over time, a range of users will require various levels of training including step by step user manuals, tutorials and workshops. Documentation of guidelines and procedures will also be necessary. Outreach activities will be required.	3.2, 4.1, 4.2	3 years/ Generic ToR	Year 1: An ICES training workshop is planned on the use of the data portal and StoX survey estimation software. Year 1–3: Updated user documentation
d	Develop communication pathway with third party software developers and providers	Third party software is commonly used during the process of preparing data for upload and analysis output from the database. To ensure continued compatibility, two-way communication with software developers is required to ensure changes in formats are communicated.	3.2		Recommendations from the governance group provided to software developers via the GitHub site.

Summary of the work plan

Year 1	Hosting of ICES training workshop, 2023. Continuation of ongoing ToRs a), b), c and d) through quarterly meeting cycle.
Year 2	ToRs a), b), c and d) through quarterly meeting cycle.
Year 3	ToRs a), b), c and d) through quarterly meeting cycle.

Supporting information

Priority	High priority.
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Resource requirements	No additional resource requirement for ICES. A commitment of time from the members of the group consistent with progressing actions identified in the quarterly meetings.
Participants	Survey planning groups; WGIPS, WGBIFS, WGACEGG, WGIDEEPS, expert groups WGFASST and WGFTFB and assessment working groups; WGWIDE, HAWG and WGHANSA. One or more members from each WG representing data providers, data users and relevant expert groups. ICES Secretariat and other related EG members as needed. Software providers and developers are also welcome to attend and provide feedback.
Secretariat facilities	Community Sharepoint site, Remote meeting facilities.
Financial	No financial implications.
Linkages to advisory and science committees	This is an integral component to the overall Quality Assurance Framework (of Advice) that ACOM together with the Coordination group are describing. WGTAFGOV is a recipient of outputs from the group.
Linkages to other groups	There is a strong linkage to DIG as the main umbrella for data/software governance structures. Links maintained with survey user groups (WGBIFS, WGIPS, WGACEGG, WGIDEEPS) and associated ICES expert groups (WGFASST).
Linkages to other organizations	NOAA via participation by members of WGFASST have expressed interest in joining the group system.

WGMLEARN – Working group on machine learning in marine science

2022/MT/DSTSG15 The **Working Group on machine learning in marine sciences (WGM-LEARN)**, chaired by Laura Uusitalo, Finland, and Jose A. Fernandes-Salvador, Spain, will work on ToRs and generate deliverables as listed in the table below.

	MEETING DATES AND VENUES	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	12 September 2024, Bilbao, Spain	E-evaluation by 22 September 2023 to DSTSG	First meeting with new chairs; previous chairs : Ketil Malde and Jean-Olivier Irisson
Year 2024	15 January 2024, online meeting	E-evaluation by TBD 2024 to DSTSG	
Year 2025	May 2026, [VENUE]	E-evaluation and final report by 1 September 2025 to DSTSG, ACOM, SCICOM	

ToR descriptors

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Shared resources: Development of shared resources such as the shared bibliography database, training materials and other resources (e.g. code, training-sets).	Shared resources will facilitate the entry of new experts in the field of ML in marine science. The curated database will serve as a good starting point for finding out about relevant work, and	4.1, 4.3, 3.6	3 years	Summary report on the materials and a plan for their maintenance

	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		shared code and training material will make it easier to kick-start own skill development and applications.			
b	Networking activities: Develop networking opportunities such as newsletters, seminars, training courses and networking with other ICES WGs	Training and networking are essential to bring new experts to the field and increase the ML knowledge and literacy of marine scientists	4.3, 4.4	3 years	Summary report on the published materials; course reports
c	Building trust on AI: Identify scientific, social and legal needs for trustworthiness development in AI for fisheries and marine sciences. Write guidelines towards AI trustworthiness development (e.g. good practices, legal proposals or communication/training actions in ToR b).	Currently AI developments focus on overcoming the technical challenges, however these developments need that are legally supported to be incorporated by the industry and trusted by the end-users (e.g. fishers or managers).	6.1	2 years	Scientific or white paper with guidelines

Summary of the work plan

Year 1	<ul style="list-style-type: none"> Plan and initiate work on three ToRs.
Year 2	<ul style="list-style-type: none"> Progress with ToRs a) and b), finalize ToR c).
Year 3	<ul style="list-style-type: none"> Finalize ToRs a) and b).

Supporting information

Priority	Machine learning is a prioritized topic by DIG, and its explorations has started in the WKMLEARN workshop in April 2018 and the WGMLEARN group in 2019–2021. The workshop highlighted a need for a centrally organized venue to share methods and best practices between researchers, to attract outside expertise, and to support publication and dissemination of results. Long-term engagement is especially needed to support deployment and integration of the new methods. The working group has compiled a literature database and is in process of publishing three review articles based on it. There is a need to continue the work to bring together and improve the ML skills in the marine science community to tackle the growing data analysis needs.
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	Machine learning is a topic of considerable and broad interest, and the group has 60 members according to the ICES listing. However not all members are active, and we expect the number of active participants to be around 10 people.
Secretariat facilities	Support to have hybrid meeting in ICES conference; possible need for meeting venue at ICES secretariat.
Financial	No financial implications.
Linkages to advisory and science committees	DIG, ICES Data Centre.
Linkages to other groups	Close working relationships with other groups that target data collection or analysis.
Linkages to other organizations	

WKARCM2 – Workshop 2 on age reading of chub mackerel (*Scomber colias*)⁵

2024/WK/DSTSG17 **Workshop 2 on age reading of chub mackerel (*Scomber colias*; WKARCM2)**, chaired by Andreia Silva, Portugal, and Carmen Hernández, Spain, will be established and meet TBD⁶ to:

- d) Review information on age determination, otolith exchanges and validation techniques on this species; ([Science Plan codes](#): 5.1, 5.2);
- e) Estimate (relative) accuracy and precision of chub mackerel age determination in the main fishing areas; ([Science Plan codes](#): 5.1, 5.2);
- f) Identify causes of age determination error and provide specific guidelines for the improvement of precision and reduction of bias between readers and laboratories; ([Science Plan codes](#): 5.1, 5.2);
- g) Elaborate on an age reading protocol; ([Science Plan codes](#): 5.1, 5.2);
- h) Create a reference collection of otoliths and a database of images of otoliths; ([Science Plan codes](#): 5.1, 5.2);
- i) Address the generic ToRs adopted for workshops on age calibration (see: WGBIOP Guidelines for Workshops on Age Calibration); ([Science Plan codes](#): 5.1, 5.2).

WKARCM2 will report by TBD 2025 for the attention of WGBIOP, DSTSG, ACOM, and SCICOM.

Supporting information

Priority	Accurate age determination is an essential feature in fish stock assessment to estimate the rates of mortality and growth. Age data are provided by different countries and are estimated using international ageing criteria which have not been fully validated for chub mackerel (<i>Scomber colias</i>). There is a great necessity to continue clarifying this guideline of age interpretation for the species. An appropriate otolith exchange has taken place between June and August 2022 for inter-calibration between ageing labs. The results of this otolith exchange were presented at WGBIOP 2022 and it will subsequently be discussed during the WKARCM2.
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⁵ WKARCM2 was set to meet in Lisbon, Portugal, 7–11 October 2024, but put on hold due to a lack of registrations.

⁶ WKARCM2 will be re-scheduled in consultation with WGBIOP.

Scientific justification	<p>Atlantic chub mackerel (<i>Scomber colias</i>) is a middle-size fish species important in the pelagic ecosystem. Landings have increased exponentially in the last 10 –15 years in most of its Atlantic distribution, and in the ICES area, mainly around the Iberia Peninsula, where a couple of decades years ago it was considered bycatch. Catches, mainly from the purse-seine fleet, are not limited, and no formal assessment and fishing management advice have been requested in the ICES area so far, the species being assessed as a single stock in FAO/CECAF region. There is, however, concern about the stock status and exploitation levels, particularly in European waters, and great uncertainty and lack of information concerning stock identity, dynamics and connectivity, and its biology. Although currently age information is not used for stock status evaluation in European waters, long historical series of age data are available in several of the institutes sampling the species that could be used for advice.</p> <p>Preliminary analysis of the species' available data has suggested geographical differences for most of its life-history parameters, and in growth patterns, that may be reflected in the otoliths' annual rings deposition among regions (WKCOLIAS2). Also, though a recent study has corroborated <i>S. colias</i> ages in Iberian waters (Navarro <i>et al.</i>, 2021), previous age calibration exercises have identified reading issues that need to be further identified and addressed (WKARCM 2015; WGBIOP 2018). The aim of this workshop is to identify the current ageing problems among readers and standardize the age reading procedures to improve the accuracy and precision in the age reading of this species.</p>
Resource requirements	No resource requirements will be necessary, except for the required conditions by each member to prepare the biological material for, and to carry out, the exchange.
Participants	Considering the importance of the species in Atlantic European waters, from the Mediterranean Sea region and in Northwest Africa, the workshop is expected to be of interest to ICES, GFCM, and FAO/CECAF Member States
Secretariat facilities	None.
Financial	None.
Linkages to advisory and science committees	ACOM, SCICOM.
Linkages to other groups	WKCOLIAS, WGBIOP.
Linkages to other organizations	EU Data Collection Framework (DCF), Regional Coordination Groups (RCGs), EU DG-MARE.

Expert groups dissolved by the end of 2024

Resolution code	EG name	Chairs
2023/WK/DSTSG04	Workshop on cetacean abundance estimation through distance sampling methods (WKCETAB)	Caterina Fortuna, Italy; Jose Antonio Vázquez, Spain; Matthieu Authier, France
2023/WK/DSTSG06	Workshop on Raising Stock Data with the RDBES data model (WKRDBES-RaiseStock)	David Currie, Ireland; Siobhán Moran, Ireland
2023/WK/DSTSG08	Workshop on Estimation of Commercial Catches using the RDBES (WKNatEst)	Jessica Craig, UK; Ana Ribeiro Santos, UK
2023/WK/DSTSG09	Workshop on introduction to RDBES data submission (WKRDBES-INTRO3)	Henrik Kjems-Nielsen, ICES Secretariat
2022/WK/DSTSG18	Workshop on the maturity staging of lemon sole (<i>Microstomus kitt</i> ; WKMSLEM)	Ingeborg de Boois, Netherlands; Ewout Blom, Netherlands