Data Science and Technology Steering Group EGs Resolutions

Resolutions approved in 2023

Working Group on Egg and Larvae and Fecundity and Atresia Database Governance (WGELFADG)

2023/MT/DSTSG01 The **Working Group on Egg and Larvae and Fecundity and Atresia Database Governance** (WGELFADG), chaired by Hannah Holah*, United Kingdom, will meet by web conference, four times per year and may also meet physically once per year, to work on ToRs and generate deliverables as listed in the Table below.

	Online Meeting dates	Physical meeting dates and Venue	Reporting details	Comments (change in Chair, etc.)
Year 2024	1) Q1 February (week 7) 2) Q2 May (week 19) 3) Q3 September (week 37) 4) Q4 November (week 47)	Week 47, Venue to be determined in Q1 meeting	E-evaluation end of 2024	
Year 2025	1) TBD 2) TBD 3) TBD 4) TBD	Date, Town, Country	E-evaluation end of 2025	
Year 2026	1) TBD 2) TBD 3) TBD 4) TBD	Date, Town, Country	Final report by TBD to DSTSG, WGALES and DIG	

ToR descriptors

ToR	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.	Centralised 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.	Finalise the format and release database on ICES dataportal.	3.2, 4.1, 4.2	Year 1 finalise database format, year 2 testing database, year 3 database open for upload and download.	Database for storage of fecundity and atresia data collected.
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: finalisation.	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: finalise insight resubmission plan.	Management plan for upload and resubmission of data and plan for providing insight in resubmissions.

Summary of the Work Plan

Year 1	Work on all ToRs in quarterly online meetings, intersessionally and during the physical annual meeting. Report orally to WGALES, DSTSG and DIG.
Year 2	Work on all ToRs in quarterly online meetings, intersessionally and during the physical annual meeting. Report orally to WGALES, DSTSG and DIG.
Year 3	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 this 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.
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, representattives of insitutes 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 ACOM and groups under ACOM	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 committees or groups	There is a close relationship with the ichthyoplankton survey gropus, WGALES, WGSINS, WGMEGS and WGACEGG, as well as WGBIOP for quality assurance of ichtyoplankton 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.

Working Group on Commercial Catches (WGCATCH)

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

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	06-10 November	ICES, Copenhagen	Interim report by 15 January to DSTSG	Karolina Molla Gazi (The Netherlands) is new co-chair for 2023-2025; Liz Clarke (UK) ends 3-yr term as chair; new co-chair will be appointed
Year 2024	To be determined	To be determined	Interim report by 15 January to DSTSG	Karolina Molla Gazi (no new co-chair appointed)
Year 2025	To be determined	To be determined	Final report by 31 January to DSTSG	Karolina Molla Gazi (The Netherlands) ends 3-yr term as co-chair; new chairs will be appointed

ToR descriptors

ToR	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 probablistic catch sampling designs. For consistent data use in time series it is necessary to document these changes particularly in regard to practical sampling issues that make a strict probablistic approach unfeasable as demonstrated by case studies. With the introduction of the Regional DataBase and Estimation System (RDBES), and the move within ICES to a transparent	3.1, 3.2, 3.3, 3.5, 3.6	3 years	• A glossary of definitions relevant to industry data collection, and an overview of industry data collection programs. • A review of sampling designs by country with special focus on probabilistic designs and implementation issues. • A review of methods of estimation by country with special focus on design based estimation, estimation using the RDBES format and packages, and estimation issues such as non-reponses.

		framework (TAF) for estimating catch parameters, and thereby putting more focus on estimation, clear case studies are needed to support this transition. 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 a future optimization at national/stock/regional levels.			
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 parameters by species) in small-scale fisheries (SSF)	WGCATCH continues to review developments in sampling and estimation practices for collection of fishing activity variables *(landings by species and fishing effort)* and biological data *(discards, length and age distributions, other biological parameters)* 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. During its term the WG will focus mainly on eight different aspects: 1) Continue to develop best practices guidelines on sampling and census	3.1, 3.2, 3.3, 3.5, 3.6	3 years	• Finalize the publication of the best practices guidelines for SSF fishing activity data *(effort and landings)* collection and estimation practices. 2023 • Summarizing inputs of sampling approaches to improve quality of SSF fishing activity data estimates. 2023 -2025 • 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 • Further developments of the data-quality risk assessment methodology for SSF fishing activty data first implemented in 2018-2020 and evaluation of the eventual improvement of SSF data quality since its first assessement. 2024 - 2025 • SSF biological data sampling: Final documentation of the sampling effort developed in ICES Member States. 2023 • SSF biological data sampling: Comparison on

		data for SSF fishing activity variables and evaluate its implementation. 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 3) Continue to document SSF biological data sampling implemented in ICES Member states and develop best practice guidelines 4) Peer-review publication on SSF 5) Continue to evaluate and discuss the use of geospatial data (e.g. GPS, AIS) to improve SSF effort estimates. 6) Continue to follow developments of RDBES database for the proper integration of SSF data and their specificities into. 7) Agree on definitions and terminology on fishing effort and other fishing activity data and develop clear infographics regarding these information. 8) Development of a table *"from data sources to fishing activity data information estimation"*.			length frequency data from SSF and LSF and evaluation of the relevance and impact of SSF data for the stock assessment, link with the the SSF sampling effort documented in Year 1. 2023-2024 • SSF biological data sampling: Development of best practices guidelines. 2024-2025 • Finalize the Peer-review publication developed and first submitted during the previous WorkPlan. 2023-2024 • Geospatial data: with a specific focus on SSF, feedbacks and advices to other ICES working groups dealing with this specific issue. 2023-2025 • RDBES: producing eventual recommandations, advices and feedbacks 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 • In coordination with all the relevant ICES working groups, development of a clear reference infographics for fishing effort and other fishing activity data. 2023-2024 • Development of a table *"from data sources to fishing activity data information estimation"*, what could be calculated/derived/estimated and what could not. 2024-2025
c	Review developments in sampling and estimation of incidental by-catch of Protected, Endangered and Threatened Species	The sampling and estimation of incidental catches of PETS and other rare species in commercial fisheries has been a long-term	3.1, 3.2, 3.3, 3.5, 3.6	3 years	• Continue to support RDBES development to ensure by-catch data is included in the RDBES. Annual reporting. • Review bycatch estimations of PETS and rare species by

	(PETS) and other rare species and ensure that database structures support the implementation of the appropriate estimation procedures.	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 by-catch 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 reviewed best practices for sampling protocols for incidental by-catches. The roadmap for ICES bycatch advice describes the science needs, and a path for ICES to strengthen its advice on incidental bycatch. WGCATCH has a important role in the roadmap by developing sampling protocols for estimating PET bycatch risk and by improving data availability and quality (e.g. through monitoring). Further work still to be developed particularly in relation to estimation procedures for rare species and ensure the incidental by-catches are included in the RDBES.			other expert groups. Annual reporting. • Report on - and support on board sampling practices at national institutes with regard to PETS. Annual reporting. • Report on - and support redesign of national databases with regard to PETS. Annual reporting. • Update the inventory of sampling programmes by ICES member countries where bycatches of protected, endangered, and threatened species (PETS) are recorded that was initiated at WKPETSAMP in 2018.
d	Review and evaluate developments on the sampling design and estimation of electronic monitoring (EM) technologies.	The expanding use of EM technologies in data collection underscores the importance for WGCATCH to evaluate the sampling designs and the quality of data	3.1, 3.2, 3.3, 3.5, 3.6	3 years	• 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, and as well as of gaps that

		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.			need to be addressed (2023 - 2024). • 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). • 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 is a major input to ICES stock assessments. The accuracy of commercial catch data is highly dependent on the quantity and quality of the sampling and estimation carried by at national level and stock coordinatation 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 2020-22, WGCATCH will work with the ACOM legacy groups and Fisheries Resources Steeirng Group	3.1, 3.2	Routine ToR	• Address specific recommendations from assessment expert groups in relation to commercial catch data to be used/revised in future benchmarks • Activily seek involvement in a review and updated of the current benchmark process for data compilation of commercial catch data, so these take resent WGCATCH findings into account

	(FRSG) to have a more active participation in the assessment and benchmark 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.	

Summary of the Work Plan

YEAR 1	ToR a) • 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. ToR b) • **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 & 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 WorkingPlan. Refine and populate intersessionnaly 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 WorkPlan. • **Peer-review publication on SSF:** Discuss the journal feedbacks following the first submission and develop a workplan to complete and finalize the paper intersessionnaly. • **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 feedbacks and/or advices 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, ToRb) 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 recommandations, advices and feedbacks 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, ToRb) 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 these information:** Development of a list of terms/reference - definition to be discussed/agreed and for which a clear infographics illustrating them is needed. Development of a WorkPlan for intersessional work and Year 2. • Annual chapter in 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-desing of national databases • Initiate review of by-catch 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, and 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.
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 estimationand review case studies addressing these issues. • Review estimation methods following the RDBES transition, with 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 feedbacks 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 & 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 feedbacks 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 WorkPlanb by vessel length ranges based on data collected in intersessionaly through an informal data call for provision of length frequency data. Analysis on 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 WorkPlan.
- **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 feedbacks and/or advices 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, ToRb) 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 recommandations, advices and feedbacks 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, ToRb) 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 these information:** Following work developed in Year 1 and feedbacks 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 note, positional data, …) regarding the fishing activity data estimates needed. Development of a first table.

- Annual chapter in 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-desing of national databases
- Continue review of by-catch estimations of PETS species by other expert groups
- Intersessional liaison with WGBYC and draft ToRs for a WK that addresses estimation of rare things (e.g. species, events) (WKRARE, 2022) in the following year. Taking the review of present methods into account. Approve proposed ToR's 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.

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 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&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. Intersessionnaly 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.
- **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 feedbacks and/or advices 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, ToRb) 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 recommandations, advices and feedbacks 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, ToRb) 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 these 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 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-desing of national databases

ToR d)

- Continue collaboration with WGTIFD, RCG ISSG on Electronic Monitoring Technologies and other relevant subsidiary bodies.
- Continue evaluation 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.

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 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, 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 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.
Linkages to ACOM and groups under ACOM	WGCATCH falls under the joint ACOM/SCICOM Data Science and Technology Steering Group (DSTSG), and supports the ICES advisory process by promoting improvements in quality of fishery data underpinning stock-based and mixed fishery assessments, ecosystem indicators related to fishery affects, 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 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 by-catches), RCM/RCGs and the Liaison Meeting (e.g., in relation to data requirements and regional sampling designs), the WGRDBESGOV and related WGs and WKs and the ICES Data Centre (in relation to RDBES issues), STECF EWGs dealing with EU-MAP and other legistalitive 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 in the Census of Marine Life Programme.

Working Group on Application of Genetics in Fisheries and Aquaculture (WGAGFA)

Was transferred from ASG to DSTSG in January 2024

2023/MT/DSTSG03 The **Working Group on the Application of Genetics in Fisheries and Aquaculture (WGAGFA)**, chaired by Naiara Rodriguez-Ezpeleta, Spain and Ian R. Bradbury, Canada, will work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2024	13–16 May	Bergen, Norway	E-evaluation by 27 May to SCICOM	Incoming chair: Ian R. Bradbury
Year 2025	6–8 May	ICES HQ, Copenhagen, Denmark	E-evaluation by 19 May to SCICOM	
Year 2026	TBD May	TBD	Final report by 30 June to SCICOM	

ToR descriptors

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	Review the significance of genetic diversity for the inclusion in the MSFD D3C3.	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 in-	2.2, 6.1, 6.3	3 years	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

		cludes "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 […]". Work is under way 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).			(MCC). To reach the scientific community and encourage further discussions, the findings will also be summarised and peer-reviewed for publication in a relevant journal.
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 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 monitoring towards EBFM will also be discussed.	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 determination needed for stock assessments. 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. 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

c	Review of genetic introgression and the potential for genetic gain for non-salmonid emerging aquaculture species: cleaner fish and Atlantic cod	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 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 domesticated escapees, and quantifying introgression.	1.8, 2.7, 4.5, 5.6	3 years	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. To reach the scientific community and encourage further discussions, the findings will also be summarised and peer-reviewed for publication in a relevant journal

Summary of workplan

Year 1	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. 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 TOR C) Review the peer-reviewed literature documenting genetic introgression and the potential for genetic gain in commercial cleaner fish species and Atlantic cod.
Year 2	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 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. 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.
Year 3	Tor a) Report dissemination and Manuscript submission. Tor b) Report dissemination and Manuscript submission Tor c) Report dissemination and Manuscript submission

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 ACOM and groups under ACOM	There are no obvious direct linkages.
Linkages to other committees 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

Workshop on cetacean abundance estimation through distance sampling methods (WKCETAB)

Approved on the resolutions forum in January 2024

2023/WK/DSTSG04 The **Workshop on cetacean abundance estimation through distance sampling methods (WKCETAB)**, chaired by Caterina Fortuna, Italy, Jose Antonio Vázquez, Spain, and Matthieu Authier, France, will be established and will meet in Rome, Italy, 16-18 April 2024 to:

a) Produce and overview of available sources of cetacean distance sampling data to be used for the MSFD D1C2 (and D1C1) subregional assessments, including:

  i) data collected in institutional dedicated surveys;

  ii) data available from other sources.

b) Agree on a coordinated approach and protocols in the ICES and GFCM areas to prepare and analyse distance sampling data on cetaceans for the MSFD D1C2 (and D1C1) assessment.

WKCETAB will report by 31 May 2024 for the attention of ACOM and SCICOM.

Supporting information

Priority	Abundance estimates of cetacean species is a key factor to assess their conservation status and the impact of antropogenic activities such as bycatch, whose management is a priority at European level. MSFD also requires Member States to report coherent values of the abundance of cetacean species at regional or subregional level (criteria D1C2), for which close collaboration and coordination is essential between neighbouring states.
Scientific justification	This workshop aims to bring together international experts (from the Atlantic and Mediterranean) involved in cetacean abundance estimation, to evaluate the quality and accuracy of current data sources, and to work towards a coordinated methodology that will enable a correct assessment for the MSFD D1C2 (and D1C1). The workshop will support a significant part of objectives 4.1 and 4.2 of The Roadmap for ICES bycatch advice on protected, endangered and threatened species and propose options to harmonize cetacean abundance estimation methods using data from regular ecosystemic surveys. Term of Reference a) Sources of Distance Sampling data. In the Northeast Atlantic, there has been several recent collaborative initiatives to collect and analyse distance sampling data to estimate cetacean abundance (OSPAR QSR 2023, CetAMBICion, SCANS-IV). However, in the Mediterranean Sea region, the only project of similar nature is the ACCOBAMS Survey Initative (ASI). This ToR will look at past and current data collation efforts to build synergies and capitalize on previous work from the both European marine basins (Atlantic and Mediterranean). There are other initiatives and sampling programs, generally at the national level, with different spatial and temporal coverage that can complement these data to better specify the status of many cetacean populations, as has been done in the Atlantic in the OSPAR QSR 2023 or in the CetAMBICion project. These approaches can be extended to the Mediterranean region, taking into consideration the EcAp/IMAP framework under the Barcelona Convention. This would strengthen the harmonisation of data and assessments. Term of Reference b) Agree on a coordinated approach Roadmap and protocols in the ICES and GFCM areas. Work will be carried out under this ToR on a series of relevant points (i.e., subregional list of species, calculation methods, GES definition, models, and parameters) and a common approach structuring key steps to continue this work torwards harmonizedreporting . The approach will, in particular, seek to identify future actions necessary to report on MSFD criteria D1C1 and D1C2; and to harmonize cetacean abundance estimation methods in ICES and GFCM areas.
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 Workshop will be attended by approximately 10–20 experts.
Secretariat facilities	None besides SharePoint facilities and secretariat support with report formatting

Financial	No financial implications.
Linkages to advisor committees	ACOM
Linkages to other committees or groups	WGMME, WGBYC and WGJCDP.
Linkages to other organizations	OSPAR, ASCOBAMS, ACCOBAMS, UNEP/MAP, NAMMCO

Working Group on Biological Parameters (WGBIOP)

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 ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2024	7-10 October	Torretta Granitola (Sicily, Italy)	E-evaluation by 21 October Interim report by 31 October 2024 to DSTSG amd SCICOM	Hybrid meeting
Year 2025	TBD	online	E-evaluation by Date Month Interim report by Date Month to DSTSG and SCICOM	
Year 2026	TBD	TBD	Final report by Date Month to DSTSG, SCICOM and ACOM	Hybrid meeting

ToR descriptors

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
	This should capture the objectives of the ToR	Provide very brief justification, e.g. advisory need, links to Science Plan and other WGs	Use codes *(max 3 per ToR)*	1, 2 or 3 years	Specify what is to be provided, when and to whom
a	Quality assurance	Organising, reviewing and prioritising 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	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;

		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.			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 and reports to be published in the ICES Library including fixing DOI where applicable (e.g. SmartDots publications). 4) Overview and recommendation of validation studies (age, maturity, etc.).
b	Promoting the unequivocal understanding and adoption of SMSF scale as well as advising of the histological approach as validation method of maturity staging.	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.	3.1, 4.1	Year 1, 2, 3	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. 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. 3) Correct the previously published conversion tables to SMSF scale. 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. 5) Encourage evenly distributed WGBIOP participation of experts on maturity and other biological parameters.
c	Follow-up on emerging tools and methods for	Many new methods for the determination of biological parameters	3.1, 4.1, 4.3	Year 1, 2, 3	1) Liaise with relevant ICES Working Groups (e.g. WGMLEARN,

	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.			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 (WKBALTPEL and WKSSNSK). 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	3.1	Year 1, 2, 3	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. 4) Develop an improved sampling design for SmartDots calibration events to account for these sources of errors. 5) Organise a second workshop on the use of Ageing and Maturity Staging Error Matrices in Stock Assessment (WKAMEMSA).

		sampling design for setting up calibration events and facilitating the integration of error data in stock assessments.			
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. 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	3.1, 4.1	Year 1, 2, 3	1) Liaise with WGSMART 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.

	that reference sets are suitable for calibration and training purposes. Consistency in approach, together with pre-defined requirements is key.	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.

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 ACOM and groups under ACOM	There are no obvious direct linkages.
Linkages to other committees or 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, WGSMART, SIMWG.
Linkages to other organizations	

Workshop on Raising Stock Data with the RDBES data model (WKRDBES_RaiseStock)

Approved in Resolutions forum March 2024

2023/WK/DSTSG06 The **Workshop on Raising Stock Data with the RDBES data model** (WKRDBES_RaiseStock), chaired by David Currie*, Ireland and Siobhán Moran*, Ireland, will be established and meet online 10-11 June and 10-11 July 2024 to:

c) Re-produce national InterCatch estimates of commercial catches of Northeast Atlantic mackerel (mac.27.nea) using R scripts that start from national Regional Database & Estimation System (RDBES) extracts; (Science Plan codes: 4.1; 5.1; 6.1)

d) Re-produce all other types of national files related to commercial catch data usually supplied to stock assessments of Northeast Atlantic mackerel (mac.27.nea) using R scripts (Science Plan codes: 4.1; 5.1; 6.1).

e) Document in a template R script the steps taken with regards to data extraction, cleaning, preparation, estimation and production of final formats and other outputs for Northeast Atlantic mackerel (mac.27.nea) from national Regional Database & Estimation System (RDBES) extracts; (Science Plan codes: 4.1; 5.1; 6.1).

f) Compile information on any aspects found limiting reproduction of existing outputs and propose a path forward for the solution of those problems that is in line with the Regional Database & Estimation System (RDBES) implementation plan (Science Plan codes: 4.1; 5.1; 6.1).

WKRDBES_RaiseStock will report by 31 August 2024 for the attention of the DSTSG.

Supporting information

Priority	High. The WGRDBESGOV voiced the clear need to develop solutions for the use of the RDBES in replacement of InterCatch. National institutes need to be prepared to change the national raising of data towards the use of the RDBES format. Realistic use of RDBES estimates is necessary in order for the RDBES development to proceed according to the roadmap.
Scientific justification	The RDBES format will be used by the national institutes'' data providers, stock coordinators, EU Regional Coordination Groups (RCGs) and other expert groups such as WGCATCH. Therefore it is essential that current estimation practices can be reproduced with the RDBES. More specifically, for each Term of Reference (ToR): Term of Reference a) and b) National estimates are an important intermediate calculation for current estimation practices, and an important result in itself for other uses of the RDBES, such as responding to EU data-calls. The initial work done in previous workshops demonstrated that some national estimations could be produced from RDBES however it is necessary to prove that we can successfully reproduce current outputs for a single stock. The workshop will be held before the WGWIDE data call so that participants can potentially use any code developed for their submission. It is important for data submitters to get used to working with the RDBES data within the data call calendar. Term of Reference c) The different stages of data manipulation should be clearly delineated so that is easy for others to understand what was done. A common template will make it easier for countries to

	share code. The template will follow the same steps as the ICES Transparent Assessment Framework (TAF) so that code can be easily migrated to that system in the future. Term of Reference d) If it is not clear how a particular national data submission can be reproduced using the RDBES data then this will be recorded for future discussion and resolution.
Resource requirements	The ICES Data Centre will provide technical support for uploading and downloading RDBES data.
Participants	Stock coordinator and national data submitters for mac.27.nea
Secretariat facilities	SharePoint site and GitHub repository.
Financial	No financial implications.
Linkages to advisory committees	There is a direct linkage with the advisory committee, as most of the stock assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other committees or groups	WGWIDE. There are also connections to WGRDBESGOV, WGCATCH, and WGRDBE-EST.
Linkages to other organizations	The RDBES will support the work done by the RCGs under the European Commission, EC. The aim is to enable the RDBES to support the countries in providing data for the data calls under the EC.

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

Approved on the resolutions forum in April 2024

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

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2024	14-18 October	Lisbon	Interim report by 18 December to DSTSG	First meeting after chairs change (previously Kirsten Birch Håkannson and Nuno Prista)
Year 2025	tbd	tbd	Interim report 18 December to DSTSG	
Year 2026	tbd	tbd	Final report by 18 December to DSTSG	

ToR descriptors

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	Continue to develop and document R scripts and functions for statistical	The Regional Database and Estimation System	3.1, 3.2, 3.3	Regular activity every year with intersessional	Documented R-scripts and functions to be added to

	estimation using the RDBES data format	(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.		work	RDBEScore package
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 visualise 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 RDBESvisualise 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	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

		functions in a package published on a public github repository (https://github.com/ices-tools-dev/).		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 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.	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
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	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. 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. ToR c) Continue the work in RDBEScore and RDBESvisualise packages, incorporating existing developments~~;~~ prepare standalone 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. 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. ToR e) Evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV. 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.
Year 2	ToR a) Discuss the feedback from WGRDBESGOV and RDBES core group on last years progress alongside developments achieved in interssessional 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. 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. ToR c) Continue the work in RDBEScore and RDBESvisualise packages, incorporating existing and new developments~~;~~ prepare a standalone ices **P**ackage; test and implement compatibility of the RDBES**CORE** package with CRAN requirements;; test work-flow and advise on roadmap for longer term RDBES packages maintainence to WGRDBESGOV. 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. ToR e) Evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV. 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.
Year 3	ToR a) Discuss the feedback from WGRDBESGOV and RDBES core group on last years' progress alongside developments achieved in interssessional 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. 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. ToR c) Continue the work of previous year in RDBEScore and RDBESvisualise packages, incorporating new developments; Publish the RDBES packages on CRAN. 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. ToR e) Evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV. 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.

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 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 (RCGs), producing the high-quality, transparent, estimates required by ICES Fisheries Advice.
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 maintainace.
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 ACOM and groups under ACOM	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 committees or 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.

Workshop on Estimation of Commercial Catches using the RDBES (WKNatEst)

Approved on the resolutions forum in April 2024

2023/MT/DSTSG08 The **Workshop on Estimation of Commercial Catches using the RDBES (WKNatEst)** chaired by Jessica Craig (UK-Scotland) and Ana Ribeiro Santos (UK-England), will meet online 24–28 June 2024 and work on the following terms of reference:

To expand the number of national estimates which can be carried out using the RDBES format by:

a) Provide practical guidance and assistance, by means of interactive support slots, to national estimators to develop R-scripts to provide national estimates of landings, discards and biological data, using the RDBES format.(Science Plan Codes: 3.3)

b) Develop and share code and techniques for national estimates of landings, discards and biological data, using R-scripts and the RDBES format. (Science Plan Codes: 3.3)

WKNatEst will report by 1 September 2024 for the attention of the Data Science and Technology Steering Group (DSTSG), ACOM and SCICOM.

Supporting information

Priority	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 1&2 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.
Scientific justification	The RDBES format will be used by the national institutes data providers, stock coordinators, RCGs and other EGs, such as WGCATCH. Therefore it is essential that current estimation procedures can be reproduced with the RDBES. This workshop will aim to support national institutes and national data providers on the transition to use the RDBES format to calculate their national estimates. This will be achieved by sharing national practices, knowledge and R-scripts. The main outcome is to increase proficiency in the use of the RDBES format in the ICES community, a necessary step to contribute to the RDBES development and proceed according to the roadmap agreed at the WGRDBESGOV 2022.
Resource requirements	Participants are requested to bring to the meeting commercial catch data: landings and sampling catch data stored in the latest RDBES exchange format. IT resources required for international virtual meeting.
Participants	The target attendees are participants from ICES member countries involved in providing commercial catch data to the stock assessment groups and use ratio estimators for their discard and biological estimates. Participants should have prior experience in statistically sound sampling and/or estimation and/or R-scripting. 10–20 participants are expected to attend.
Secretariat facilities	Standard Secretariat support.
Financial	EU Member States may fund this through their EMFF programme
Linkages to advisor committees	ACOM, SCICOM, DSTSG
Linkages to other committees or groups	WGCATCH, WGRDBESGOV, WGRDBES-EST and other associated RDBES groups.
Linkages to other organizations	Regional Coordination Groups, General Fisheries Commission for the Mediterranean

Workshop on introduction to RDBES data submission (WKRDBES-INTRO3)

Approved on the resolutions forum in April 2024

2023/MT/DSTSG09 The third **Workshop on introduction to RDBES data submission (WKRDBES-INTRO3)** chaired by Henrik Kjems-Nielsen, ICES Secretariat will be held online from 24-26 September 2024 to:

a. Describe and explain the RDBES data model to national data submitters and introduce participants to the necessary documentation for providing data.

b. Arrange support sessions where participants can request expert guidance on adapting national data to the RDBES data model.

WKRDBES-INTRO will report for the attention of DSTSG, ACOM and SCICOM by 31 October 2024.

Supporting information

Priority	The activities of this workshop will give the necessary introduction to new users of the Regional Database and Estimation System, RDBES, and promote further adaptation of the system. This workshop will help countries to correctly convert their national data formats to the RDBES format, and ensure necessary input for establishing future ICES training courses. The RDBES when it is implemented works as a database for the Baltic Sea, North Sea & Eastern Arctic, North Atlantic and Long Distance Fisheries Regional Coordination Groups (RCGs). The RDBES will also function as a database and estimation system for ICES Fisheries Advice. The development will concentrate on harmonisation, quality assuring, documentation, approved estimation methods and transparency. Consequently, these activities are considered to have a very high priority. ICES have issued data calls for the RDBES in 2020, 2021 and 2022. ICES will issue a data call in 2023 for data from 2022 samples for all stocks, and 20221 landings and effort data for all stocks, in the updated RDBES format. The ideal conclusion is that at the end of this workshop each person attending has developed working scripts to extract the data that will be requested by the RDBES data call
Scientific justification	The RDBES will be extensively used by the RCGs and ICES both to store detailed fisheries sample data and use it for estimation - therefore it is essential that national data submitters are familiar with the RDBES format and confident in correctly converting their national data to this format. The WKRDB-POP (2019), the WKRDB-POP2 (2020), and the WKRDB-POP3 (2021) started this process, and the WKRDBES-INTRO (2022) took over. TheWKRDBES-INTRO have to continue because not all relevant institutions have participated in these previous workshops, and it is necessary to both maintain introductions to new institutions, and develop a long term training program that can ensure that necessary trainging can be provided for new personell in the future. **ToR a) – Describe and explain the RDBES data model to national data submitters and introduce participants to the necessary tools for providing data.** The different components of the RDBES data format will be explained, and participants will be introduced to resources that provide detailed documentation of the data model, an online data-submission portal, and the RDBES issue reporting solutions. **ToR b) – Arrange support sessions where participants can request expert guidance on adapting national data to the RDBES data model.** This is the most important part of the workshop and will be allocated two full days - it will entail the RDBES Core Group providing practical online assistance to the attendees, through bookable support-slots. The workshop attendees must be familiar with their own national sampling programme designs, and must have made preparations necessary to provide real data sets of their national

	samples to the workshop. The Core Group will then help them make decisions of which RDBES tables are relevant to fill in, and provide clarifications to the documentation when necessary. The more work that attendees have done in trying to populate the RDBES format with their own data before the workshop the more value they will gain from this work. When new questions are identified and resolved they can be added to the RDBES "Frequently Asked Questions" so that other people can benefit from the answers, and when unclarities in the documentation is resolved through support slots, the Core Group can follow up with revisions to the documents.
Resource requirements	Members of the "RDBES Core Group" will be requested to participate in the support sessions and as hands-on instructors/demonstrators. The ICES Data Centre will provide technical support for RDBES data uploading, and the presentations introducing participants to the RDBES.
Participants	~60 people
Secretariat facilities	SharePoint, Online meeting room support
Financial	No financial implications.
Linkages to advisory committees	There are no direct linkages with the advisory committees, but most of the stock assessment Working Groups will in the future use the RDBES as one of their primary data sources.
Linkages to other committees or groups	There is a link to WGRDBESGOV, WGRDBES-EST, WGCATCH and WGQUALITY.
Linkages to other organizations	The RDBES will support the work done by the RCGs under the European Commission, EC. The aim is also allow the RDBES to support the countries in providing data for the data calls under the EC.

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

Approved on the resolutions forum in April 2024

2023/MT/DSTSG10 The **Working Group on Stock Coordination with the RDBES data model (WGRDBES-StockCoord)**, chaired by Sofie Nimmegeers and NAME, COUNTRY (tbd) will work on ToRs and generate deliverables as listed in the table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2024	14-18 October	Lisbon, Portugal	Interim report 18 December to DSTSG	Working Group establised
Year 2025	tbd	tbd	Interim report 18 December to DSTSG	
Year 2026	tbd	tbd	Final report 18 December to DSTSG	

ToR descriptors

ToR	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 stock assessment models used in ICES AWGs	The Regional Database & Estimation System (RDBES) provides flexibility in national and regional estimation that goes beyond that currently 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.	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 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 by means of R-scripts and functions that build from national/regional estimates in the new exchange format (ToR a) and generate a variety of input files input into stock assessment models (ToRb), making increasing use of the wider statistical potential the RDBES now offers. To secure transparency and reproducibility stock coordination this process will also be included in TAF. WGRDBES-StockCoord will develop a set of R functions to carry out stock coordination procedures similar to 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 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.	3.1, 3.2, 3.3	Regular activity every year with intersessional work	Documented R-functions and example vignettes to be included to RDBESstockCoord package
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 is achieved by the incorporating them in an R 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	RDBESstockCoord published in ICES github alongside associated documentation and vignettes

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 stocck 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 its outputs in TAF.	3.1, 3.2, 3.3	Regular activity every year	Evaluation on whether outputs and processes from WGRDBES-STOCKCOORD are fit and ready for integration within TAF.

Summary of the Work Plan

Year 1	ToR a) Discuss the new national/regional exchange format suggested by WGRDBESGOV. Suggest changes to data model specifications where needed. ToR b) Identify the R-code needed in the RDBESstockCoord package. Start developing that code. 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 ToR d) Evaluate progress achieved and suggest a way forward to WGRDBESGOV with regards to stock coordination. ToR e) Collaborate with WGRDBESGOV (and relevant groups thereunder) and WGTAFGOV to identify requirements for an integration of WGRDBES-EST outputs into TAF.
Year 2	tbd
Year 3	tbd

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 in TAF allowing ready access to national/regional estimates, stock coordination scripts, and final inputs supplied to assessment models resulting in the production of higher-quality, transparent, estimates 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 Group is expected to be attended by about 20 members. Participants should be proficient in writing own 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 ACOM and groups under ACOM	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 committees or groups	There is a direct link to WGRDBESGOV, the RDBES core group and close links to activities of WGTAFGOV, WGQUALITY, 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 2022/2023

Working Group on Fisheries Acoustics, Science and Technology (WGFAST)

2022/FT/DSTSG01 A **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	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	31 March	Portland, Maine, USA	Interim report by TBD to SCICOM	Anne Lebourges-Dhaussy takes over as chair
Year 2024	8-12 April	Brest, France	Interim report and e-evaluation by 22 April to SCICOM	
Year 2025	TBD	TBD	Final report by 30 May to SCICOM	

ToR descriptors

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	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.
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 WGFAST 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 AcMETA 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	Updated metadata convention publication on ICES Library Publication GitHub repository. Updated SONAR-netCDF4 convention publication that includes echosounder data on ICES Library Publication GitHub repository. Updated list of open-source efforts on WGFAST GitHub site.
e	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 (ToR d) 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 socialogical 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.
f	Collate resources that document operational settings, parameters, and characteristis 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.

g	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 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.	3.2, 3.5, 4.2	3	Recommendations provided in the WGFAST science report..

Summary of the Work Plan

Year 1	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	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	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 ACOM and groups under ACOM	Stock assessment groups using acoustic abundance indices.
Linkages to other committees or 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.

Working Group on DATRAS Governance (WGDG)

2022/FT/DSTSG02 The **Working Group on DATRAS Governance (WGDG)**, chaired by Ingeborg de Boois, the Netherlands, will meet by web conference, four times per year and may also meet physically once per year, to work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	6 February 9 May 28 June 28 September	3-4 online meetings	E-evaluation by TBD	
Year 2024	Tbd	3-4 online meetings	E-evaluation by TBD	
Year 2025	Tbd	3-4 online meetings	Final report by XX May to DSTSG and DIG	

ToR descriptors

ToR	Description	Background	Science Plan codes	Duration	Expected Deliverables
a	Advise on recommendations and requests from expert groups (submitters and end users) related to DATRAS.	Centralised 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.
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: finalisation (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 resubmitted 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	3.2, 4.1, 4.2	All years	Updated webpage (year 1); Updated registration of changes in resubmitted data (year 2/3).

	opportunity to do that in a use friendly manner

Summary of the Work Plan

Year 1	Work on all terms of reference in three to four 1.5 hour skype meetings and intersessionally, provide oral report to data science and technology steering group (DSTSG)
Year 2	Work on all terms of reference in three to four 1.5 hour skype meetings and intersessionally, provide oral report to data science and technology steering group (DSTSG)
Year 3	Work on all terms of reference in three to four 1.5 hour skype 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 ACOM and groups under ACOM	ACOM groups form an important part of the DATRAS end user population.
Linkages to other committees or 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

Working Group on Greening the Research Fleet (WGGRF)

2022/FT/DSTSG03 A **Working Group on Greening the Research Fleet** (WGGRF), chaired by Aodhan Fitzgerald, Ireland and Christian Freudinger, Germany, will work on Terms of Reference ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	3 May	Online meeting	e-evaluation	Kick-off meeting
	October	Bremerhaven, Germany		Visit to RV Uthörn (100% methanol)
Year 2024	28 May	Online Meeting	e-evaluation by Nov/Dec	online workshop
	Nov	Online Meeting		Follow-up and meeting 2025 prep
Year 2025	Oct	Galway, Irland	Final report by 20 Dec to DSTSG	Green Research Fleet meeting possibly joint with IRSO

Terms of Reference (ToR) descriptors

ToR	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: includng 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 WG'S	*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 and their legal relevance for operation of research vessels	a) Short overview on relevant international regulations d) identify relevant gaps in the regulations for RV e) identify regulations that are particularly difficult	6.4	2 years	Report or technical paper. Respond to 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	Working on all ToRs, but with special focus on ToRs a nd b
Year 2	Working on all ToRs, but with special focus on ToRs a,b, c, d, e and f
Year 3	Working on ToRs d, r, f and Finalize and report on all ToRs

Supporting information

Priority	The proposed terms of reference adresses important questions for emerging techniques and technologies for designing, building, and operating research vesseels 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 vesseles 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 ACOM and groups under ACOM	There are no obvious direct linkages.

Linkages to other committees or groups	There is a very close working relationship with all the groups XXXSG. 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

Working Group on Recreational Fisheries Surveys (WGRFS)

Was transferred from DSTSG to FRSG in 2023

Workshop on appropriate sampling schemes for Protected Endangered and Threatened Species bycatch (WKPETSAMP3)

2022/WK/DSTSG07 The **Workshop on appropriate sampling schemes for Protected Endangered and Threatened Species bycatch (WKPETSAMP3)** chaired by Katja Ringdhal* (Sweden), Sara Königson (Sweden), and Estanis Mugerza (Spain), will meet in Copenhagen, Denmark on 13–17 November 2023 to:

a) Identify criteria and best practices for designing a multipurpose programme for sampling and estimating bycatch of PETS in order to assess population level impacts (Science Plan Codes: 3.2 and 3.3);
b) Make recommendations for improving monitoring systems for PETS bycatch at a Member State level and for regional level coordination. Amongst others, it should include proposals for adjusting DCF sampling to cover all PETS bycatch relevant fisheries. (Science Plan Codes: 6.4).

WKPETSAMP3 will report by 15 December 2023 to the attention of the HAPISG, ACOM and SCICOM.

Supporting information

Priority	The workshop is directly linked to a special request for advice from DGEnvironment on 'appropriate bycatch monitoring systems at Member State level and on regional coordination.'
Scientific justification	WKPETSAMP2 and WKPETSAMP3 will contribute to enhance data availability and improve data quality for bycatch estimates of protected species. Both workshops will support objective 4.2. of The Roadmap for ICES bycatch advice on protected, endangered and threatened species; propose options to improve the data availability and quality. The workshops will address two of the types of information needed to assess the conservation threat posed by fishery bycatch to a particular species: (i) the susceptibility of that population to bycatch in particular fisheries (based on monitoring effort); (ii) the scale of the fisheries concerned (based on total fishing effort by fishing gear for all relevant fleet segments and with effort given in meaningful metrics).

	Relevant outcomes from the Workshop on Estimation of Rare Events (WKRARE, 2021) will be considered. In addition, conclusions from the recent review of monitoring of bycatch of protected, endangered, and threatened species of mammals, birds, turtles and fish[1] will be taken into account The criteria mentioned in WKPETSAMP2 and WKPETSAMP3 ToR a may include: • Adequate temporal resolution (e.g. quarter, month, year) for the different taxa (mammals, birds, turtles); • Adequate "primary sampling units" (e.g. haul level, trip level, other aggregation levels) for the different taxa (mammals, birds, turtles); • Use of standardized effort calculation methodologies and relevant total effort units (e.g. Fishing days vs. soak time) for different métiers; • Impact of the use of different effort units (e.g. Fishing days, hauls, km/hr) in bycatch rate calculations for a given métier; • Data quality of total effort data from different sources; • Identification of key geographic areas to be monitored; • Identification of key métiers to be monitored; • Identification of adequate monitoring methodologies (e.g. REM, dedicated observers) for the different métiers; • Adequate temporal frequency of the sampling. The case studies mentioned in WKPETSAMP1 ToR b will include data recorded through remote electronic monitoring, dedicated observer programs, crew observers from reference fleets.
Resource requirements	None beyond the funding for the workshops to be provided by DGEnvironment
Participants	The workshops will be attended by approximately 15 experts.
Secretariat facilities	SharePoint access and Secretariat support including assistance from the ICES Data Centre.
Financial	Financed through specific budget linked to a special request for ICES advice.
Linkages to advisory committees	ACOM
Linkages to other committee or groups	DSTSG, HAPISG, WGCATCH, WGBYC
Linkages to other organizations	OSPAR, HELCOM

1 ICES. 2022. EU request on the review of monitoring bycatch of protected, endangered, and threatened species of mammals, birds, turtles and fish under the service of EC DG ENVIRONMENT. In Report of the ICES Advisory Committee, 2022. ICES Advice 2022, sr.2022.04, https://doi.org/10.17895/ices.advice.10096

Working Group on Optimization of Biological Sampling (WGBIOPTIM)

2022/FT/DSTSG08 The **Working Group on Optimization of Biological Sampling** (WGBIOPTIM), chaired by Patrícia Gonçalves (Portugal), Isabella Bitetto (Italy) will meet intersessionally, 2 times per year online (dates TBD) and physically once per year, to work on ToRs and generate deliverables as listed in the Table below.

	Online Meeting dates	Meeting dates and Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	TBD	18-21 April 2023 Bari, Italy	E-evaluation by 12 May to DSTSG	
Year 2024	TBD	9-12 April 2024 Lisbon, Portugal	Interim report and e-evaluation by 3 May to DSTSG	
Year 2025	TBD	TBD	Final report by TBD to DSTSG	

ToR descriptors

ToR	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 the BIOPTIM work (WKBIOPTIM 1 - 4).	Specific resolutions to the continuation of the work depevolped under the workshops on optimization of biological sampling from 2017 until 2021.	3.1, 3.2, 3.3	3 years/ Generic ToR	
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 outuputs 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 optimaztion methods.	3.2, 3.3, 4.1	3 years/ Generic ToR	R-package
d	Implement the existing R-tools (WKBIOPTIM 1 -	As a product in which all the R-tools will be	3.2, 3.3, 4.1	3 years/ Generic ToR	R-package

	4), into an R-package with documentation for a wider application.	compile and make available to allow a more wider application of the different optimization methods.		
e	Adapt the main R-tools to accommodate the different sampling design schemes (e.g. hierarchies from RDBES).	The way sampling data is 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 estabilishing methods prioritisation of work on the R-packages/code. User feedback will be requested from the end users via the GitHub site and by email. Feedback will be compiled by WGBIOPTIM and appropriate actions to be taken with assigned responsibilities will be listed and prioritised.	The feedback platform will run in GitHub. All feedback will be converted to an issue on the working group GitHub site, assigned priorities, assignees, labels for various R-tools, effort and milestones for completion.	3.1, 4.1	3 years/ Generic ToR
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	All ToRs.
Year 2	All ToRs.
Year 3	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	Statistical sound sampling is very important, if not essential for 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. 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.
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 committees	ACOM
Linkages to other committees or groups	SCICOM, WGCATCH, WGBIOP, WGQUALITY, DSTSG, Survey WGs (IBTS, IBAS, etc.)
Linkages to other organizations	RCGs, GFCM

Working Group on Spatial Fisheries Data Governance (WGSFDGOV)

2022/FT/DSTSG09 A **Working Group on Spatial Fisheries Data Governance (WGSFDGOV)**, chaired by Roi Martinez* (UK), will be established and will meet 4 times per year via online meeting and may meet physically once per year in association with DIG, to work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	Q1 – 23 March Q2 – 30 June Q3 – 5 October Q4 – 14 December	Online meetings	E-evaluation	
Year 2024	Q1 TBD Q2 TBD Q3 TBD Q4 TBD	Online meetings	Interim report by TBD to DIG and DSTSG	Roi Martinez takes over as chair.
Year 2025	Q1 TBD Q2 TBD Q3 TBD Q4 TBD	Online meetings	Final report by Date TBD to DIG and DSTSG	

ToR descriptors

ToR	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 Manifestocan 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 prioritise, and definition of resources available, including responsibilities
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 from 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	Rationalise data needs and provide guidance for data submitters.	Review the spatial fisheries data calls and submissions to (a) rationalise the data needs; (b) provide easy and understandable guidance for those that have to answer the calls and submit data. Oversee and advise on the interpretation and prioritisation of recommendations and requests addressed to the VMS and Logbook DB. This can only be sucessfully implemented when resource requirements have been estimated and the availability of resources is known.	3.5, 3.2	3 years/ Generic ToR	Provide an annual workplan, with an agreed and prioritised list of VMS DB related EG and Logbook DB recommendations along with suggested resource allocations, budget estimates and feasibility estimates. Provide a platform (GitHub site) for user feedback to the VMS DB.
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	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	Guided by ToR a), including its continuous review, ToRs c) to e) will be adressed in quarterly online meetings.
Year 3	Guided by ToR a), including its continuous review, ToRs c) to e) will be adressed 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 ACOM and group under ACOM	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 committees or 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

SCAR-Fish/ICES/EFARO Workshop on Enabling Mechanisms for Science-Industry Partnerships to inform the Ecosystem Approach (WKEMSIP) – *postponed, ToRs under revision*

2022/FT/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 will meet in Copenhagen, Denmark, date TBD to:

g) 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);

h) 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).

i) Identify research gaps which would address the needs in utilising 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 (date TBD) for the attention of the Science and Advisory Committee.

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	Term of Reference a) 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 co-operations, strengthen and further develop existing partnerships. Term of Reference b) 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) Term of Reference c) Identifying gap areas for research will be an important output which can be utilised by SCAR-fish to inform DG research Funded research supporting actions.

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 committees	The outcomes of the workshop might be relevant for future advice development.
Linkages to other committees or 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

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

2022/FT/DSTSG11 A **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	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	20-24 november	ICES HQ, Copenhagen, Denmark (Hybrid)	Interim report by 1 March 2024 to DSTSG	
Year 2024	TBD	ICES HQ, Copenhagen, Denmark (Hybrid)	Interim report and e-evaluation by TBC to DSTSG	In 2024 the three year period of the current chairs is ending.
Year 2025	TBD	ICES HQ, Copenhagen, Denmark (Hybrid)	Final report by TBC to DSTSG	

ToR descriptors

ToR	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	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	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.

	project plan as required. Oversee and advise on the interpretation and prioritisation of recommendations for the RDBES development. Identify user guidance and training required for RDBES users.	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.			The RDBES project plan is monitored and fulfilled. Recommendations for relevant workshops are made.
b	Provide a platform for feedback to the Regional Database & 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 prioritised. Establish and follow-up the required sub-groups (ISSGs including the existing "Core group"), created in support of the functioning and use of the RDBES.	The Regional Database & Estimation System (RDBES) should develop to meet the requirements of a broad range of users and needs to be responsive to user feedback.	3.1, 3.2, 3.3	3 years / generic ToR	A public Regional Database & Estimation System (RDBES) GitHub site is maintained - this makes the data model available, and provides a platform for users to raise and discuss issues. ISSG (such as the existing "Core group") complete any required tasks (e.g. refining specifications and answering user queries) Recommendations from users are responded to.
c	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.	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. Therefor it is important to monitor how different users are using the data.	3.1, 3.2, 3.3	3 years / generic ToR	Summaries of the existing commercial fisheries Regional Database (RDB) and the new Regional Database & Estimation System (RDBES) data calls are published annually. Summaries of the use of RDB/RDBES data are published annually.
d	Review the data licence and data policy of the Regional Database & Estimation System (RDBES)	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). Data license and govern-	3.1, 3.2, 3.3	3 years / generic ToR	Appropriate Regional Database & Estimation System (RDBES) data license and governance policies are agreed and implemented

	ance 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 - 3	An annual meeting will be held, as well as any inter-sessional work required, to work on the ToRs. ToR a) • 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) • 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) • Review and summarise 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) • 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 to 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 ACOM and group under ACOM	The stock assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other committees or 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).

Working Group on the Acoustic Trawl Data Portal Governance (WGAcousticGov)

2022/FT/DSTSG13 The **Working Group on Acoustic Trawl Data Portal Governance** (WGAcousticGov), chaired by Elor Sepp (Estonia), will meet by web conference, four times per year and may meet physically once per year, to work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	22 May 27 September 19 December	By correspondance	E-evaluation	Elor Sepp appointed as chair.
Year 2024	Feb/May/Sept/Dec	By correspondance	E-evaluation by TBD	
Year 2025	Feb/May/Sept/Dec	By correspondance	Final report by TBD	

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.

ToR descriptors

ToR	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 prioritisation 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.
b	Coordinate and advise on the interpretation and prioritisation of recommendations and requests addressed to	Quarterly meeting cycle required to be reactive to user needs and to operate effectively given the available resources	3.2, 4.1, 4.2	3 years/ Generic ToR	Proritised list of issues and recommendations

	the Acoustic Trawl Data Portal.	within the ICES Datacentre.			
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 compatability, 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
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 WGFAST and WGFTFB and assesment 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 ACOM and groups under ACOM	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 recpient of outputs from the group
Linkages to other committees or 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 (WGFAST)
Linkages to other organizations	NOAA via participtation by members of WGFAST have expressed interest in joining the group system.

Working group on machine learning in marine science (WGMLEARN)

2022/FT/DSTSG15 A **Working Group on machine learning in marine sciences** (WGMLEARN), 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	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	12 September	Bilbao, Spain /Hybrid	E-evaluation by 22 September	First meeting after chairs change (previously Ketil Malde and Jean-Olivier Irisson)
Year 2024	15 January June	Online meeting TBD	 E-evaluation by TBD	
Year 2025	May	TBD	Final report by 1 September 2025	

ToR descriptors

ToR	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 data base will serve as a good starting point for finding out about relevant work, and shared code and training material will make it easier to kick-start own skill development and applications.	4.1, 4.3, 3.6	3 years	Summary report on the materials and a plan for their maintenance

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 guideliness

Summary of the Work Plan

Year 1	Plan and initiate activities in the three ToRs
Year 2	Progress with ToRs a) and b), finalize ToR c)
Year 3	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 disemmination of results. Long term engagement is especially needed to support deployment and integration of the new methods. The working group has compiled a literature data base and is in process of publishing hree 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 ressources 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 memebers 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 ACOM and groups under ACOM	DIG, ICES Data Centre

Linkages to other committees or groups	Close working relationships with other groups that target data collection or analysis.
Linkages to other organizations	

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

2022/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 in Lisbon, Portugal, 7-11 October 2024 to:

a) Review information on age determination, otolith exchanges and validation techniques on this species; (Science Plan codes: 5.1, 5.2);
b) Estimate (relative) accuracy and precision of chub mackerel age determination in the main fishing areas; (Science Plan codes: 5.1, 5.2);
c) 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);
d) Elaborate on an age reading protocol; (Science Plan codes: 5.1, 5.2);
e) Create a reference collection of otoliths and a database of images of otoliths; (Science Plan codes: 5.1, 5.2);
f) 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 1 November 2024 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 (*Scomber colias*). 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.
Scientific justification	Atlantic chub mackerel (*Scomber colias*) 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. 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 *S. colias* ages in Iberian waters (Navarro *et al.*, 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.
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.

Workshop on the maturity staging of lemon sole (*Microstomus kitt*) (WKMSLEM)

2022/WK/DSTSG18 The **Workshop on the maturity staging of lemon sole (*Microstomus kitt*)** (WKMSLEM), chaired by Ingeborg de Boois, Netherlands, and Ewout Blom, Netherlands, will be established and meet in Oostende, Belgium, date 24-26 June 2024 to:

a) Agree on a common maturity scale description for lemon sole (*Microstomus kitt*) across laboratories following the SMSF scale (https://vocab.ices.dk/?CodeID=201768); (Science Plan codes: 3.1);
b) Calibrate staging of lemon sole using fresh fish; (Science Plan codes: 3.1);
c) Calibrate staging of lemon sole using SmartDots, following the pattern of trial-discussion-retrial; (Science Plan codes: 3.1);
d) Validate macroscopic maturity determination with histological analysis; (Science Plan codes: 3.1);
e) Propose optimal sampling strategy to estimate accurate maturity ogives; (Science Plan codes: 3.1).

WKMSLEM will report by date 12 July 2024 for the attention of WGBIOP, DSTSG, ACOM, and SCICOM.

Supporting information

Priority	High.
Scientific justification	Laboratories involved in the collection of maturity data for the various assessment working groups use different macroscopic maturity scales for the same species. To cover the same topics throughout the maturity staging workshops, the generic ToRs adopted for maturity staging workshops (see: WGBIOP 2020 Guidelines) will also be considered in the meeting.
Resource requirements	Space on SmartDots@ICES for pictures and connecting fish information. Before the workshop, the chairs will set up a sampling plan for assembling (and collecting, if needed) samples to be used during the workshop. Additional sampling will be carried out during 2023.

	Guidelines on how to prepare for the workshop, as well as for collecting maturity data and histological analysis for the workshop have been updated and are available in the WGBIOP 2020 Guidelines.
Participants	In view of its relevance to the DCF, the Workshop is expected to attract wide interest from ICES Member States that participate in the biological sampling of lemon sole.
Secretariat facilities	None.
Financial	None.
Linkages to advisory and science committees	ACOM, SCICOM.
Linkages to other groups	WGNSSK (the assessment working group for lemon sole), WGBEAM, IBTSWG (the survey working groups where lemon sole maturity is assessed), and WGBIOP.
Linkages to other organizations	EU Data Collection Framework (DCF), Regional Coordination Groups (RCGs), EU DG-MARE.

Resolutions approved in 2021

Working Group on Technology Integration for Fishery-Dependent Data (WGTIFD)

2021/FT/DSTSG03 The **Working Group on Technology Integration for Fishery-Dependent Data (WGTIFD)**, co-chaired by Brett Alger, United States; and Lisa Borges, Portugal; will work on Terms of Reference (ToRs) and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2022	1) 7-9 June (sub-group meeting) 2) 18-21 October (main meeting)	1) Lisbon, Portugal 2) Galway, Ireland	Interim report by 15th January 2023 to DSTSG	
Year 2023	1) 23-25 May 2) 21 November	1) Aberdeen, UK 2) Online	Interim report by 15th January 2024 to DSTSG	
Year 2024	1) 3-7 June 2024	Vigo, Spain	Final report by 15th January 2025 to DSTSG	

ToR descriptors

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	Define vocabulary across electronic technologies (ETs) for fisheries dependent data collection, and develop communication strategies for attracting participation in ET programs	There are a range of terms and applications for ETs, and challenges with gaining participants in ET programs. We developed a glossary of terms in 2019 and examined incentives for attracting participants, this TOR would be a continuation of those previous efforts.	4.1, 4.5	Ongoing	List of updated terms and a communication strategy
b	Inventory the various applications of ETs for reporting and monitoring with an aim to improve collaboration across TIFD members and national fisheries monitoring programs	This TOR will serve as a repository to continually document new and existing ET programs, ETs in development, objectives of the schemes under which they are deployed for management, science, and control, what data are being collected and by whom.	4.1, 4.5	Ongoing	Inventory of various ETs and implementation of ETs in national reporting and monitoring programs
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, mid-water 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	Develop and publish a standardized format for data collected and analyzed from EM systems, to include a framework of documenting how the data is collected and flows into the ICES data system to be considered for science advice	This TOR would look to align data collected from EM systems with the ICES data framework, using the data profiling tool, and approval process of integrating new data for science advice. TIFD would develop a draft data format, and consider using a specific EM program's data as a case study to develop a pathway for new EM programs to provide data to ICES.	4.2, 5.1	Year 1-3	Data specification standard in Year 1, Guidelines for integrating EM data into ICES data systems for providing science advice in Year 3
e	Provide guidance and best practices on drafting Statements of Work for different types of EM programs	Governments and their associated monitoring programs often utlize Request for Proposals (RFPs), Statements of Work (SOWs), Call for Tenders (CFT) and other forms of soliciting private companies for products and services. Across the EU and US, this often means that the same set of EM providers are providing responses to RFPs, SOWs, and CFTs that lack specificity and clarity. This TOR will consider different EM program designs and provide recommendations for standardizing RFPs, SOWs and CFTs across the EU and US.	3.1	Year 2	Templates of RFPs, SOWs, CFTs etc. that governments and monitoring programs can use to solicit products and services for the development of an EM pilot project or program.
f	Provide recommendations on how to utlize 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 analyze data for PET bycatch monitoring	3.1, 3.2, 6.2	Year 2	Best practices and recommendations for designing a data collection program using EM for protected and endangered species
g	Develop and publish recommendations for interoperability of EM systems, raw data, and other appropriate guidance for ensuring that EM systems and programs can integrate across governances, fisheries, and EM systems	Raw file types and data collected from EM systems are diverse, making it difficult for programs to utilize multiple EM providers or for governances to exchange information. This TOR will improve the interoperability of information collected from EM systems and include coordination with EM service providers	3.1, 4.1	Year 3	Standardized interchange format and exchange process of raw information collected from EM systems.

Summary of the Work Plan

	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 for virtual meetings. We intend on developing intercessional meetings to focus on specific TORs, to supplement progress made in the annual meetings, as a way to mitigate the loss of in-person meetings.
Year 1	Produce an annual overview of the working group's progress
Year 2	Produce an annual overview of the working group's progress
Year 3	Produce a final report on the working group's progress and completed TORs.

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 exchanging information to share relevant technical applications and policy development to harmonize how data is 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 meeting (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 topic of interest, with programs in every Region in the United States and the EU. We reached over 60 members in the first 3 years of the working group, we expect that it could grow.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and group under ACOM	Data Science and Technology Steering Group
Linkages to other committees or groups	WGMLEARN, WGCATCH, WGFAST, PGDATA WGSFD, WKSEATEC, WKDSG, ICES Data Centre, DIG
Linkages to other organizations	

Working Group on SmartDots Governance (WGSMART)

2021/FT/DSTSG02 The **Working Group on SmartDots Governance**[2] (WGSMART), chaired by Karen Bekaert (2022–2024), Belgium; and Julie Coad Davies (2022–2023), Denmark; and Côme Denechaud* (2023–2024) will meet intersessionally, 4 times per year via online meeting and physically once per year, to 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 2022	1) 10 February 2) 21 April 3) 8 September 4) 1 December	24-25 October ICES headquaters	E-evaluation	Julie Coad Davies and Karen Bekaert appointed as chairs
Year 2023	1) 9 February 2) 27 April 3) 7 September 4) 30 November	27-28 October San Sebastian, Spain	E-evaluation	Julie Coad Davies ends her 2-yr term as chair New co-chair will be appointed

[2] http://ices.dk/marine-data/tools/Pages/smartdots.aspx

Year 2024	1) 1 February 2) 29 April 3) 5 September 4) 28 November	22-23 October ICES headquaters	Final report by 16 December 2024 to DSTSG	Côme Denechaud apponited as chair Karen Bekaert ens her 3-yr term as chair

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	Oversee the evaluation of user feedback related to maintenance and developments and advise on the interpretation and prioritisation of recommendations and requests addressed to WGSMART	SmartDots is an operational tool that aims to improve the overall quality of biological data delivered to assessment EG's. The tool is operational and an integral part of the ICES QAQC for aging many fish species for which ICES provides advice, a procedure largely under the guidance of WGBIOP. Evaluation and prioritisation of recommendations and requests will be an ongoing task.	3.1, 4.1	3 years/ Generic ToR	A prioritised list of SmartDots related expert group recommendations with a proposed annual work plan to address issues and implement maintenance and improvements to SmartDots.
b	Oversee the implementation of development requests addressed to WGSMART	Developments are ongoing with all SmartDots modules and based on user requirements and feedback. WGSMART will implement these developments in line with recognised quality assurance procedures.	3.1, 4.1	3 years/Generic ToR	Additional software modules with features designed in accordance with recognised quality assurance procedures.
c	Elaborate a forward plan for the sustainability of SmartDots as a platform	To achieve a continous quality, SmartDots needs to be developed in line with end users needs. This development requires an input of resources; knowledge, expertise, manpower and funding over a period of time which extends beyond the initial phase. A workplan with clear	4.4, 3.6	3 years/ Generic ToR	A workplan outlining what resources are required for development, support, training and dissenimation of relevant information. An estimated budget including identified funding resources.

		objectives and milestones can only be sucessfully implemented when the availability of such resources is clear.			
d	Oversee development of user guidance and training in SmartDots	As SmartDots develops overtime a range of users will require various levels of training including step by step user manuals, tutorials and possibly workshops. Documentation of guidelines and procedures in line with WGBIOP will also be necessary. Outreach activities will be required.	3.1, 4.1	3 years/ Generic ToR	Annually updated training documentation. Workshops with specific goals proposed and planned where necessary. Relevant fora for dissemination investigated and outreach activities planned.

Summary of the Work Plan

In addition to the ongoing maintenance and improvements by the end of year three we aim 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.

Year 1	ToR a) and b) will be addressed in quarterly WebEx meetings. ToR c) and d) will be discussed during WGBIOP and addressed at the annual meeting.
Year 2	ToR a) and b) will be addressed in quarterly WebEx meetings. ToR c) and d) will be discussed during WGBIOP and addressed at the annual meeting.
Year 3	ToR a) and b) will be addressed in quarterly WebEx meetings. ToR c) and d) will be discussed during WGBIOP and addressed at the annual meeting.

Supporting information

Priority	
Resource requirements	A commitment of time from the members of the group consistent with progressing actions identified in the quarterly meetings
Participants	Chair of WGBIOP needs to be an active member, 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.
Secretariat facilities	Community Sharepoint site, Remote meeting facilities
Financial	No financial implications
Linkages to ACOM and groups under ACOM	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 committees or groups	There is a very close working relationship with WGBIOP. There is a strong linkage to DIG as the main umbrella for data/software governance structures.
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

Working Group on the Joint Cetacean Data Programme (WGJCDP)

2021/FT/DSTSG01 A **Working Group on the Joint Cetacean Data Programme** (WGJCDP), chaired by Nikki Taylor, United Kingdom, will work on ToR and generate deliverables as listed in the Table below.

JCDP information: https://jncc.gov.uk/our-work/joint-cetacean-data-programme/

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2022	15 September	Online	Interim report to DSTSG by 31 October	To follow the WGMME, a start-up meeting to adopt the ToR and workplan for the group
Year 2023	4-5 April	ICES HQ, Denmark	Interim report by TBD to DSTSG	
Year 2024	19-21 March	ICES HQ, Denmark	Final report by 5 April to DSTSG	

ToR descriptors

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	Establish a governance framework, setting out a forward-looking plan for JCDP, including responsibilities, priorities, processes, and resources	The governance group will be responsible for oversight of the JCDP; proactively maintaining dataflow in and out of the JCDP, and ensuring the supporting information in the ICES portal and web hub remains current and suports the JCDP objectives.	3.2; 3.5	Ongoing	Publication and public launch of the JCDP Data Portal Web hub (currently hosted by JNCC)
b	Review the JCDP data holdings in terms of standardisation, data quality and number of datasets, with regards to production of high-quality outputs using the ICES governance evaluation.	The Group will be responsible for the reputation of the JCDP, ensuring standardised, quality assured data are held within the JCDP and the databse becomes a widely used high-quality data source.	3.5	Annual	Report on the number of survey datasets submitted and the number of contributing organsations. Governance evaluation template
c	Identify proactive methods of promotion of the JCDP Data Standard across data collectors involved, and	The JCDP Data Standard has been developed to improve the standard of data across all data	3.2; 3.5; 3.6	Ongoing	Publication and launch of new and updated data products derived

	those not yet engaged with the JCDP to drive standardisation and subsequent compatibility for analyses.	collectors, and enable collation of exisiting and new datasets to facilitate access of these data to increase the evidence base.			from JCDP datasets
d	Development of analyses and data products derived from the JCDP to contribute to assessment and reporting requirements and research and policy priorities, as agreed by the Group, and in collabroation with WGMME.	The JCDP aims to standardise and mobilise data from multiple sources to improve capacity to complete robust analyses of trends in abundance and distribution, in support of commitments to reporting under OSPAR, ACSOBANS, EU Directives and National legislative needs.	4.2; 6.1; 6.4	Ongoing	Annual reporting on the use of and publication from the JDCP dataset
e	Review use of the JCDP datasets, provide a platform for end user feedback and promote high-quality science	The JCDP aims to be a source of high-quality outputs, either developed by the governnace group 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.	3.6	Ongoing	End-user feedback platform Annual reporting on the use of and publication from the JDCP dataset

Summary of the Work Plan

Year 1	Formation of the governance group; review of the JCDP objectives and strategy; adoption of the WGJCDP ToR; review of JCDP data holdings; development of analyses and data product plans based on identified need with partner groups such as WGMME; OSPAR; ASCOBANS and other end users.
Year 2	Critical review of the progress against project objectives; development and dissemination of data outputs; further development of data analyses and products.
Year 3	Critical review of the progress against project objectives; updating, development and dissemination of data outputs. Further development of data analyses and products.

Supporting information

Priority	The activities of this Group will lead development of analyses and data products from the growing JCDP dataset, to answer research and policy questions regarding trends in cetacean abundance and distribution. The group will champion standardisation and mobilistaion of data in support of inovative analyses to underpin high-priority assessment and reporting need across the North-East Atlantic region and beyond.
Resource requirements	The group will require some support form the ICES scretarit in facilitating meetings and communication.
Participants	The Group will likley be attended by approx 20–25 members and guests.
Secretariat facilities	Provision and suppor tof communication services such as WebEx, as required.

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 opportunity 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.
Linkages to other organizations	Given the data holdings, it is expected there will be close links with other organisations such as OSPAR, NAMMCO and ASCOBANS in terms of data exchange and communication regaarding analysis and data product requirements.

EGs dissolved by the end of 2023

Res. Code	EG name	Chairs
2021/WK/DSTSG09	WKBIOPTIM5 - Fifth Workshop on Optimization of Biological Sampling This workshop was cancelled and WGBIOPTIM has been established instead.	Patrícia Gonçalves (Portugal), Isabella Bitetto (Italy)
2021/WK/DSTSG08	WKEnsure - Workshop on developing guidance for ensuring the integrity of scientific information submitted to ICES by data providers	Nathalie Steins (the Netherlands) and Bjarte Bogstad (Norway)
2022/WK/DSTSG06	WKPETSAMP2 - Workshop on appropriate sampling schemes for Protected Endangered and Threatened Species by-catch	Katja Ringdhal (Sweden), Sara Königson (Sweden), and Estanis Mugerza (Spain)
2022/WK/DSTSG12	WKRDBES-RaiseTAFFlow - Workshop on the RDBES Flow	Alexandros Kokkalis (Denmark) and Yves Reech (Norway)
2022/WK/DSTSG14	WKRDBES-INTRO2 - The second workshop on introducing the Regional Database and Estimation System (RDBES) data format	Henrik Kjems-Nielsen (ICES Secretariat)
2022/WK/DTSG16	WKARMSE - The Workshop on age reading and maturity stages of elasmobranch species	Karen Bekaert (Belgium), Kélig Mahé (France) and Maria Cristina Follesa, (Italy)
2020/FT/DSTSG03	Working Group on the Governance of Quality Management of Data and Advice (WGQuality)	David Currie (Ireland)