Data Science and Technology Steering Group EGs Resolutions

Resolutions to be approved

Working Group on Commercial Catches (WGCATCH)

2022/FT/DSTSGxx   *Placeholder; resolution to be submitted; approval will be sought on the resolutions forum.*

Resolutions approved in 2022

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 ACOM_SCICOM	Anne Lebourges-Dhaussy takes over as chair
Year 2024	8-12 April	Brest, France	Interim report by TBD to ACOM_SCICOM	
Year 2025	TBD	TBD	Final report by 30 May to ACOM_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 group 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	
Year 2024	Tbd	3-4 online meetings	E-evaluation	
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 Ao-dhan 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	June	Online Meeting	e-evaluation	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 group 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)

Resolution approved with minor changes – final version expected shortly

2022/FT/DSTSG04   The **Working Group on Recreational Fisheries Surveys (**WGRFS**)**, chaired by Kieran Hyder, UK, and Estanis Mugerza, Spain, will work on ToRs and generate deliverables as listed in the table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2023	12–16 June 2023	Ancona, Italy	Interim report by 01 November 2023 to DSTSG	
Year 2024	10–14 June 2024	TBD	Interim report by 01 November 2024 to DSTSG	Estanis Mugerza completes 3 years as chair
Year 2025	14–18 June 2025	TBD	Final report by 01 November 2025 to DSTSG	Kieran Hyder completes 3 years as chair

ToR descriptors

ToR	Description	Background	Science Plan codes	Duration	Expected Deliverables
a	Collate and review quality of national estimates of recreational catch and effort, catch-and-release impacts, and socio-economic benefits for candidate stocks, identify significant data gaps in coverage and species, and support the ICES TAF and ecosystem approach.	Most countries are engaged in data collection. This activity collates national participation, catch and socio-economic data sets together, understands the quality of data, and highlights where new data are needed. This is important for supporting the ICES TAF and ecosystem approach.	2.1, 3.1, 3.2, 5.4	Regular activity in each year, with intersessional tasks and workshops to develop new approaches.	Report WG perspectives and publication of scientific papers
b	Assess the validity of traditional knowledge, new survey designs, novel methods (e.g. citizen science, apps), innovative statistical methods for data provision, and approaches for selecting appropriate cost-effective methods.	Recreational data can be collected in many ways, with different associated biases. This supports improvement of analysis of existing surveys and understanding the utility of new methods. This will lead to the most robust and broad	3.1, 3.2, 3.3, 3.6, 4.1, 4.3, 4.4, 5.4	Regular activity in each year, with intersessional tasks and workshops to develop new approaches.	Report WG perspectives and publication of scientific papers

		evidence-base to underpin asessment and advice.			
c	Provide guidance to ICES and respond to ad hoc requests from ACOM on the availability of data, design of data collection programs, data storage systems, use of data in assessments, catch allocation, and ecosystem approach.	Recreational catches are not included in many assessments and data collection is limited to a few species. This activity supports data collection requirements, access to data and methods needed. This will facilitate embedding recreational fisheries into fisheries management.	3.1, 3.2, 3.3, 3.5, 3.6, 5,1	Regular activity in each year, with intersessional tasks and workshops to develop new approaches.	Report WG perspectives and publication of scientific papers
d	Develop approaches for regional data collection programmes that generate robust data for end users and support the ICES TAF and ecosystem approach.	Regionalisation is an important goal, but implementation is unclear This is a challenge for recreational fisheries due to the different actors, gears and survey instruments. This will underpin generation of transparent and robust regional data to support end users needs.	3.1, 3.2, 3.3, 3.6,	Regular activity in each year, with intersessional tasks and workshops to develop new approaches.	Report WG perspectives and publication of scientific papers
e	Evaluate the use of economic (e.g. impact, valuation), social (e.g. governance, behaviour, welfare, health), and communication (e.g. participatory process, messaging) to support the assessment and management of recreational fisheries.	Recreational fisheries have broad benefits and behavioural responses are difficult to predict due to diverse motivations. Hence, understanding of the human dimension is needed. This develops understanding of the data and methods needed for codesign.	7.1, 7.4, 7.6	Regular activity in each year, with intersessional tasks and workshops to develop new approaches.	Report WG perspectives and publication of scientific papers
f	Review outcomes of the workshops organized by the group.	Recreational fisheries is a diverse topic, so not all aspects can be adressed at WGRFS. A number of workshops on specific topic have been done or are in the workplan. This reviews outcomes of the workshops and the implications for recreational fisheries.	5.4, 7.1, 7.4	Activity-dependent on workshop	Report WG perspectives and publication of scientific papers

Summary of the work plan

Year 1	1)	Review progress of intersessional groups (i.e. governance, survey design, quality and analysis, regional coordination, data storage, catch-and-release impacts, novel methods, assessment and catch allocation, human dimensions, and communication) and agree approach for the next year. (a, b, c, d, e)
	2)	Evaluate the quality of up to three national survey programmes using the QAT and provide feedback on tasks requested by ICES. (a, c)
	3)	Review the outputs from ICES WRGRFS led workshops and discuss next steps for the inclussion of outcomes. (f)
	4)	Scope data call for ICES based on the formats developed by WGRFS and the RDBES core group. (c, d, f)
	5)	Assess priorities for inclusion of recreational fisheries in stock assessment using data from the pilot studies. (a, c, d)
	6)	Develop ICES workshop proposal with WGCATCH for intergrating probabilistic and non-probabilistic surveys. (b)
	7)	Create ICES workshop proposal to evaluate post-release mortality estimates, potential sublethal effects, and reasonable extrapolations across species and fisheries for inclusion in stock assessments. (a)
	8)	Assess the potential for food safety and human health issues from consumption of recreational caught fish (e.g. environmental toxins). (e)
	9)	Review and share methods for engaging with stakeholders and the potential for particpatory approaches. (e)
Year 2	1)	Evaluate the outcomes from the intersessional work and agree approach for the next year. (a, b, c, d, e, f)
	2)	Review national programmes including assessment of quality of up to three programmes and provide feedback on tasks requested by ICES. (a)
	3)	Assess the potential of novel survey methods to deliver recreational fisheries data (e.g. citizen science approaches, smartphone apps, traditional knowledge). (b)
	4)	Develop a framework for allocation of catches between sectors based on a review of existing systems and provide best-practice guidance. (c,d)
	5)	Develop MSE approaches to assess the impact of uncertainty in recreational catches on assessment and regional sampling programme. (d).
	6)	Review and share methods for engaging with stakeholders and the potential for particpatory approaches. (e)
	7)	Assess outcomes of workshop on inclusion of recreational data in stock assessments. (f)
Year 3	1)	Review progress of intersessional groups (i.e. governance, survey design, quality and analysis, regional coordination, data storage, catch-and-release impacts, novel methods, assessment and catch allocation, human dimensions, and communication) and agree approach for the next year. (a, b, c, d, e)
	2)	Evaluate the quality of up to three national survey programmes using the QAT and provide feedback on tasks requested by ICES. (a, c)
	3)	Review the outputs from ICES WRGRFS led workshops and discuss next steps for the inclussion of outcomes. (f)
	4)	Collate advances in survey methods that could be used to improved national approaches. (b)
	5)	Assess the potential for impact of climate change on species caught by recreational fisheries and how that coud impact on DCF and regional species requirements. (c, d)
	6)	Develop ICES workshop proposal on MSE approaches to assess the impact of uncertainty in recreational catches on assessment and regional sampling programmes. (d).
	7)	Assess the potential of novel survey methods to deliver recreational fisheries data (e.g. citizen science approaches, smartphone apps, traditional knowledge). (b)
	8)	Evaluate progress against three year plan and develop new ToRs. (a, b, c, d, e, f)

Supporting information

Priority	High—the biological, social and economic impact of recreational fishries is becoming increasing recognised and needs to be included in the fisheries assessment and management processes.
Resource requirements	None.
Participants	The WG is normally attended by around 60 members and chair-invited experts.
Secretariat facilities	Normal backstopping support in the organization of the group.
Financial	None.
Linkages to ACOM and groups under ACOM	ACOM, WGBFAS, WGEEL, WGBAST, WGCSE, WGNSSK, WGBIE, WGMEDS, and benmarks workshops for stocks that have recrational catches.
Linkages to other committees or groups	WGCATCH.
Linkages to other organizations	• EC, STECF, Regional Coordiantion Groups, Advisory Councils. • WECAFC/OSPESCA/CRFM/CFMC/MEDAC Working Group on Recreational Fisheries. • Many linkages to (inter)national angling associations, since WGRFS members estimate national marine recreational catches. • Links to broader organizations with interests in angling and fisheries management including EIFACC and FAO.

Workshop on appropriate sampling schemes for Protected Endangered and Threatened Species bycatch (WKPETSAMP2)

2022/WK/DSTSG06 The **Workshop on appropriate sampling schemes for Protected Endangered and Threatened Species bycatch (WKPETSAMP2)** chaired by Katja Ringdhal* (Sweden), Sara Königson* (Sweden), and Estanis Mugerza* (Spain), will meet intersessionally in February 2023 to:

a) Through correspondence, review relevant scientific literature where criteria and data quality thresholds have been applied to PETS bycatch monitoring data in order to derive bycatch mortality estimates. (Science Plan Codes: 3.2 and 3.3)

and in Copenhaguen on 6-10 March 2023 to:

b) Apply the relevant criteria and data quality considerations from ToR a to case studies using different sampling and monitoring approaches and to evaluate the quality and certainty of bycatch assessments . (Science Plan Codes: 3.2 and 3.3);

c) Apply a simulation framework to the selected case studies and compare the results with those obtained under ToR b. (Science Plan Codes: 3.2 and 3.3)

WKPETSAMP2 will report by 1 June 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 to enhance data availability and improve data quality for bycatch estimates of protectes 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 fromreference 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.

[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

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

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[2] 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 committees or groups	DSTSG, HAPISG, WGCATCH, WGBYC
Linkages to other organizations	OSPAR, HELCOM

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2 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	Interim report by 12 May to DSTSG	
Year 2024	TBD	TBD	Interim report by TBD 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 - 4), into an R-package	As a product in which all the R-tools will be compile and make	3.2, 3.3, 4.1	3 years/ Generic ToR	R-package

	with documentation for a wider application.	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 Christian von Dorrien*, Germany, 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	* Term of current chair prolonged for one year
Year 2024	Q1 TBD Q2 TBD Q3 TBD Q4 TBD	Online meetings	Interim report to DIG and DSTSG	
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:

a) Review and consider recent research and practical examples of good practices and lessons learned in science-industry partnerships on industry based data collection; (Science Plan codes: 3.5, 3.6, 4.2, 4.6);

b) Identify enabling mechanisms for cooperation and benefits of science-industry partnerships on industry based data collection for science and industry (Science Plan codes: 3.5, 3.6, 4.2, 4.6).

c) Identify research gaps which would address the needs in 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, SCARfish, 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	TBC	ICES HQ, Copenhagen, Denmark (Hybrid)	Interim report by TBC to DSTSG	In 2024 the three year period of the current chairs is ending.
Year 2025	TBC	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 project plan as required.	The Regional Database & Estimation System (RDBES) will be extensively used by ICES member states, the EU Regional Coordination Groups, and ICES expert groups to store detailed commercial fisheries sample data. The	3.1, 3.2, 3.3	3 years	An up-to-date roadmap for the Regional Database & Estimation System (RDBES) developments describing when functionality will be available. The RDBES project

	Oversee and advise on the interpretation and prioritisation of recommendations for the RDBES development. Identify user guidance and training required for RDBES users.	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.			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).

Workshop on the RDBES Flow (WKRDBES-RaiseTAFFlow)

2022/WK/DSTSG12   The **Workshop on the RDBES Flow (WKRDBES-RaiseTAFFlow)** chaired by Alexandros Kokkalis, Denmark, and Yves Reech, Norway will be established and will meet online, 22, 24, 26 May (half day sessions) with the objective to:

    a) Within the RDBES, test the full commercial catch TAF estimation workflow from national estimates to international stock coordination suggested at WKRDBES-Raise&TAF (2022) for two stocks, wit.27.3a47d and pok.27.3a47d. This includes looking into setting up the TAF repository for national estimation of commercial catches and international stock coordination of catch estimate. This with the focus in setting up of the structure, roles, confidential folders, and continuing the data format specifications for exchange of data within TAF and storage of these.

    b) Make recommendations to WKRDBES-Raise&TAF2 and WGRDBESGOV about the roles in the flow.

d)

WKRDBES-RaiseTAFFlow will report by 1 August 2023 for the attention of DSTSG and SCICOM.

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, and stock assessment groups need to be prepared to make use of total stock-harvest estimates from the RDBES. Realistic utilization of RDBES estimates is necessary in order for the RDBES development to proceed according to the roadmap decided on WGRDBESGOV 2021. While this activity was first planned for 2021, the workshop had to be cancelled. It is therefore important to prioritize this for 2023).
Scientific justification	WKRDBES-Raise&TAF, 2022, put forward a recommendation for WGRDBESGOV to arrange a workshop to test the proposed TAF workflow on a small scale, to evaluate if the suggestion is the way forward.
	The suggestion covers the structure of the TAF repository, specification of roles, access to data and data formats for exchanging data within TAF and storage of the latter.
Resource requirements	Participation of the ICES data centre is needed with regards to expertise in TAF

Participants	At least two national data submitters and national stock estimators for wit.27.3a47d and pok.27.3a47d, and the stock coordinator and assessor for each stock.
	(Engagement from people involved in the two stocks was promised at WKRDBES-Raise&TAF, 2022).
Secretariat facilities	Workshop chair, SharePoint, and 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 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

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

2022/FT/DSTSG13   The **Working Group on Acoustic Trawl Data Portal Governance** (WGAcoustic-Gov), 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 Sept TBD Dec TBD	By correspondance	E-evaluation	Elor Sepp appoited as chair.
Year 2024	Feb/May/Sept/Dec	By correspondance	E-evaluation	
Year 2025	Feb/May/Sept/Dec	By correspondance	Final report	

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	3.2, 4.1, 4.2	3 years/ Generic ToR	A transparent record of user issues, the process of address and implementation.

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

Second workshop on introducing the Regional Database and Estimation System (RDBES) data format (WKRDBES-INTRO2)

2022/WK/DSTSG14   The second workshop on introducing the Regional Database and Estimation System (RDBES) data format (WKRDBES-INTRO2), chaired by Henrik Kjems-Nielsen, ICES Secretariat, will be established and will meet online, 13 – 15 June 2023 to:

a. Describe and explain the Regional Database and Estimation System (RDBES) data model to national data submitters and introduce participants to the necessary documentation for providing data; (Science Plan codes: 4.1;5.1;6.1);

b. Arrange support sessions where participants can request expert guidance on adapting national data to the Regional Database and Estimation System (RDBES) data model; (Science Plan codes: 4.1;5.1;6.1);

c. The WK will give extra attention to the CE and CL files, considering the results of the quality reports developed by the core group. CL and CE are often filled in by different bodies than CS files (i.e. the Administration), which often are not so involved in the technical WK. Therefore, as it is beneficial and advisable they become familiar with this, this ToR will address this topic specifically. (Science Plan codes: 4.1;5.1;6.1)

WKRDBES-INTRO2 will report by 31 October 2023 for the attention of SCICOM and DSTSG.

Supporting information

Priority	The activities of this workshop will promote the adoption of the Regional Database and Estimation System, RDBES. This workshop will help countries to correctly convert their national data formats to the RDBES format. The RDBES 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 will once again issue a data call in 2023 for sample, landings and effort data in the RDBES format.
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.
	Term of Reference a)
	The RDBES data format will be explained using its documentation, and a number of worked examples. These worked examples will play an important role in illustrating the types of decisions that data submitters will need to make.
	This work will focus on explaining what type of data each RDBES table stores and how to populate it.
	Term of Reference b)
	This is an important part of the workshop and it will entail the workshop chair and the RDBES Core Group providing practical online assistance to the attendees. The workshop attendees must be familiar with their own national sampling programme designs. The Core Group will answer questions and provide advice to help them to convert their data to the new RDBES format. 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.
	Term of Reference c)
	From this year on, the WK will also put some focus on the CE and CL files, taking into account the results of the quality reports developed by the core group.
	CL and CE are often filled in by different bodies than CS files (i.e. the Administration), which sometimes are not so involved in the technical WK. Therefore, if we want them to attend, a special effort needs to be done in that direction
	When new questions are identified and resolved they may be added to the RDBES "Frequently Asked Questions" so that other people can benefit from the answers.
Resource requirements	Members of the "RDBES Core Group" will be requested to participate as hands-on instructors/demonstrators.
Participants	~60 people: experts responsible for delivering CL, CE data; experts working with sampling data
Secretariat facilities	Workshop chair, SharePoint, and 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 be impacted by the development of the RDBES.
Linkages to other committees or groups	There is a link to WGRDBESGOV, WGCATCH, and WGBYC.
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 call under the EC.

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	First meeting after chairs change (previously Ketil Malde and Jean-Olivier Irisson)
	11 December	Online meeting		
Year 2024	June	TBD	E-evaluation	
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 group 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 on age reading and maturity stages of elasmobranch species (WKARMSE)

2022/WK/DTSG16 The **Workshop on age reading and maturity stages of elasmobranch species** (WKARMSE), chaired by Karen Bekaert, Belgium, Kélig Mahé, France and Maria Cristina Follesa, Italy, will be established and meet in Cagliari, Italy 5–9 June 2023 to:

a) Review information on age determination from vertebra and maturity staging and validation techniques on these species (Science Plan codes: 5.1, 5.2);

b) Estimate (relative) and compare accuracy and precision of elasmobranch species age and maturity staging determination in the Atlantic Ocean and Mediterranean Sea (Science Plan codes: 5.1, 5.2);

c) Identify causes of age determination and maturity staging error, and provide specific guidelines for the improvement of precision and reduction of bias between readers and la-oratories (Science Plan codes: 5.1, 5.2);

d) Elaborate on an age reading and maturity staging protocol (Science Plan codes: 5.1, 5.2);

e) Create a reference collection of vertebrae for ageing data and of gonads for maturity stag-ing (Science Plan codes: 5.1, 5.2);

f) Address the generic ToRs adopted for workshops on age calibration and maturity staging (see 'WGBIOP Guidelines for Workshops on Age Calibration') (Science Plan codes: 5.1, 5.2).

WKARMSE will report by [TBD] for the attention of DSTSG, ACOM, SCICOM, and WGBIOP.

Supporting information

Priority	Accurate age determination and maturity staging are essential features in fish stock assessment to estimate the rates of mortality, reproduction and growth. Age and sexual maturity data are provided by different countries and are estimated using international criteria, which have not yet been fully validated for elasmobranch species. There is a great necessity to continue clarifying the guidelines for age and maturity stages interpretation for these species. Two appropriate exchange programmes were therefore carried out in 2022 for ageing data from vertebra and maturity staging through inter-calibration exercises between labs. The results of these exchanges will subsequently be discussed during the WARMSE.
Scientific justification	The workshop aims to review the technical problems regarding age-reading and maturity staging, and the interaction of Elasmobranch species between the Atlantic Ocean and the Mediterranean Sea. This workshop is the first on the biology of the Elasmobranch species and also the first workshop which will integrate both ageing data and maturity staging data.
Resource requirements	No particular 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 exchange is expected to be of interest to ICES, GFCM and FAO/CECAF Member States
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory and science committees	ACOM, SCICOM.
Linkages to other groups	WGBIOP.

Linkages to other organizations	RCGs, EU DG-MARE, EU Data Collection Framework.

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, 20–24 November 2023 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 [TBD] 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, [TBD] 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 [TBD] 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

Fifth Workshop on Optimization of Biological Sampling (WKBIOPTIM5)
This workshop is cancelled. WGBIOPTIM has been established instead.

2021/WK/DSTSG09   The **Fifth Workshop on Optimization of Biological Sampling (WKBIOPTIM5)** chaired by Patrícia Gonçalves* (Portugal), Isabella Bitetto (Italy), (and possibly a third chair, tbd) will be held in place and date TBD to:

a) Continue working on the preparation of an R package; (Science Plan codes: 3.3);
b) Continue working on the development on the tests and models to be included on main R tools developed under the BIOPTIM workshops;
c) Consolidate and update existing open source code used in previous workshops (BIOPTIM1-4) and generalize for wider use, package code and document tools, and assess compatibility of tools with use of standard data formats and sources (Science Plan codes: 3.2);
d) Start to adapt the main R tools to accommodate the sampling design (e.g. hierarchies from RDBES);
e) Continue to provide support on the use of WKBIOPTIM tools with the aim of a future optimisation at national/stock/regional levels. (Science Plan codes: 3.2 and 3.3).

WKBIOPTIM5 will report by date TBD 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 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 workshop 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 Workshop 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 DSTG should also be among the participants.
Secretariat facilities	Secretariat support
Financial	Member States may fund this through their EMFF programme

Linkages to advisory and science committees	ACOM
Linkages to other groups	SCICOM, WGCATCH, WGBIOP, WGQUALITY, DSTSG, Survey WGs (IBTS, IBAS, etc.)
Linkages to other organizations	RCGs, GFCM

Workshop on developing guidance for ensuring the integrity of scientific information submitted to ICES by data providers (WKEnsure)

2021/WK/DSTSG08   The **Workshop on developing guidance for ensuring the integrity of scientific information submitted to ICES by data providers.** (WKEnsure), chaired by Nathalie Steins and Bjarte Bogstad, will be established and will meet at ICES HQ, Copenhagen, 6 February (noon) to 10 February (noon) 2023 to:

- e) Review and consider previous work, and existing (international) guidance, standards, tools, and documentation relating to managing potential conflicts of interest in the provision of data and information that may affect the integrity of ICES science and advice. (Science Plan codes: 3.1, 3.6);
- f) Evaluate how the ICES Data Profiling Tool can contribute to the process of ensuring the integrity of scientific information submitted to ICES by data providers. (Science Plan codes: 3.1, 3.6).
- g) Produce guidance on how to identify, assess risks, and document conflicts of interest in data provision, where possible building on existing activities within ICES. (Science Plan codes: 3.1, 3.6);
- h) Recommend next steps to operationalize the guidance for addressing potential conflict of interest in data and information provision. (Science Plan codes: 3.1, 3.6);

WKEnsure will report by 10 March 2023 for the attention of the Data Science and Technology Steering Group (DSTSG).

Supporting information

Priority	This workshop is of high priority, as indicated by recent discussions within ICES and between ICES and its clients on issues of scientific integrity. Supporting information to justify it as high priority can be found in the ToRs and outcomes of recent workshops, including WKDSG (Nov 2020) and WKSHOES (June 2021).
Scientific justification	The recommendation for this workshop originates from the workshop on Data Standards and Guidelines for Fisheries Independent Data (WKDSG, Nov 2020), where a review of available standards and guidance did not uncover existing standards within ICES for addressing potential conflict-of-interest of data-providers. ICES witnesses increasing data and information contributions by the fishing industry, environmental organisations or other third parties, often in response to existing knowledge gaps. During plenary discussions, conflict of interest was highlighted as an important potential threat to the integrity of advice, and perceived conflict of interest as an important potential threat to the legitimacy of advice.
	WKDSG recommended that standards be developed for managing conflict of interest (perceived or actual) in the collection and application of data for use by ICES. The purpose of

such standards should be to protect the legitimacy of advice when data-providers with potential conflict of interests are involved.

Term of Reference a) Review and consider previous work, and existing guidance, standards, tools and documentation in well-established scientific advisory systems relating to managing potential conflicts of interest that may affect the integrity of data of information provided to ICES. As part of this review, explicit attention will be given to recent initiatives within ICES such as using a risk register (Data and Information Group) and the development of a data profiling tool aimed at increasing transparency and traceability of third party contributions.

The recipients of scientific advice need to be assured that the risk of biased sampling or reporting is adequately managed, particularly when data-providers are perceived to have a direct stake in the application of the scientific advice. This situation is different from other situations where concerns about conflict of interest may arise, such as scientific meetings and review panels; ICES has already implemented procedures for conflict of interest in relation to participation in expert groups.

Term of Reference b) Evaluate how the ICES Data Profiling Tool can contribute to the process of ensuring the integrity of scientific information submitted to ICES by data providers. (Science Plan codes: 3.1, 3.6).

The ICES Data Profiling Tool https://www.ices.dk/data/tools/Pages/Data-profiler.aspx helps experts in evaluating the completeness of supporting information for a data product, data source or web application. It is designed as a checklist for dataflows and data products primarily feeding scientific and/or advice outputs through ICES working groups. The checklist currently comprises questions on: data sharing, data categorisation, storage and access, data quality, and data format. An example of a completed template is available at https://www.ices.dk/data/Documents/tools/data-profile-example.pdf

The tool's aim is to both document the dataflow or product and assist the ongoing effort in ICES to quality assure all aspects of its advice production. The use of common tools within ICES quality management will enable a more consistent and efficient approach to be taken.

ToR b will evaluate whether the ICES Data Profiling Tool can contribute to the process of ensuring the integrity of scientific information submitted to ICES by data providers. Where relevant, it will make recommendations on improvements that could be made to better support this process.

Term of Reference c) Produce guidance on how to identify, assess risks, and document conflicts of interest in data provisions, where possible building on existing activities within ICES.

Development of implementable guidance for managing conflict of interest should not only address the additional legitimacy-risks introduced by third-party participation in data-collection, but also acknowledge the risks that may already be associated with the data-collection performed by scientific institutions. Guidance for managing conflicts of interest in data collection should therefore clearly address requirements for transparency and documentation.

Examples of conflict of interest around provision of data and information by industry or environmental organisations will be used to illustrate the issues and processes that should be addressed.

Term of Reference d) Recommend next steps to operationalize the guidance for addressing potential conflict of interest in data and information provision.

ToR d should be considered within the context of ICES work on Quality Assurance Frameworks, which includes linkage to relevant existing working groups and governance groups.

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 is expected to be attended by some 20–25 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory committees	ACOM, SCICOM
Linkages to other committees or groups	DSTSG, DIG
Linkages to other organizations	..

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)	1) Lisbon, Portugal	Interim report by 15th January 2023 to DSTSG	
	2) 18-21 October (main meeting)	2) Galway, Ireland		
Year 2023	1) 23-25 May	1) Aberdeen, UK	Interim report by 15th January 2024 to DSTSG	
	2) 21 November	2) Online		
Year 2024	Oct/Nov 2024	TBD	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**[3] (WGSMART), chaired by Karen Bekaert (2022–2024), Belgium; and Julie Coad Davies (2022), Denmark; and TBD (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 to chair
Year 2023	1) 9 February 2) 27 April 3) 7 September 4) 30 November	27-28 October San Sebastian, Spain	E-evaluation	XXX to chair
Year 2024	1) 1 February 2) 11 April 3) 12 September 4) 28 November	22-23 October ICES headquaters	Final report by TBD to DSTSG	XXX to 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	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.

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

		procedure largely under the guidance of WGBIOP. Evaluation and prioritisation of recommendations and requests will be an ongoing task.		
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 objectives and milestones can only be sucessfully implemented when the availability of such resources is 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.
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	February/March	To coordinate with the WGMME	Final report by TBD 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	Publiction 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 those not yet engaged with the JCDP to drive standardisation and subsequent compatibility for analyses.	The JCDP Data Standard has been developed to improve the standard of data across all data collectors, and enable collation of exisiting and new datasets to facilitate access of these data to increase the evidence base.	3.2; 3.5; 3.6	Ongoing	Publication and launch of new and updated data products derived 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	The JCDP aims to be a source of high-quality	3.6	Ongoing	End-user feedback platform

platform for end user feedback and promote high-quality science	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.		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 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.

Resolutions approved in 2020

Working Group on the Governance of Quality Management of Data and Advice (WGQuality)

2020/FT/DSTSG03   A **Working Group on the Governance of Quality Management of Data and Advice** (WGQuality), chaired by David Currie, Ireland; will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2021	19-22 January	Online	E-evaluation 1st March 2021 to DSTSG	
Year 2022	18-20 January	Online	E-evaluation by 1st March to DSTSG	
Year 2023	17-20 January	ICES HQ, Denmark	Final report by 15th March to DSTSG	

ToR descriptors

ToR	Description	Background	Science Plan codes	Duration	Expected Deliverables
a	Analyse existing ICES quality management processes within advice production and evaluate their coherence with the objectives of the ICES advisory plan. In particular highlight any gaps and overlaps between different processes.	The concept of "quality" is cross-cutting and should be managed throughout a process. The ICES advisory plan highlights the first priority area for development is "Assuring Quality" - it states that quality assurance "encompasses the entire process from data collection to the publication of objective and independent advice". .	3.1, 3.2, 3.3	3 years	An evaluation of the existing quality processes and procedures within ICES.
b	Specify a fully operational ICES advisory quality management system that is in line with the scope and direction in the advice plan.	There is a recognition within ICES of the need for an end-to-end quality management system (QMS) to encompass best practice in data management, data integration, and translation into advice. A QMS is defined as "…a formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives".	3.1, 3.2, 3.3	3 years	A draft ICES quality manual which will describe the overall approach to assuring the quality of assessment and advice within ICES. This will cover the quality assurance process from data collection to advice publication.
c	Create and implement an internal communication plan to explain the	There is a large amount of activity in the ICES world focussing on data needs for assessment and advice. One of the major	3.1, 3.2, 3.3	3 years	Quality assurance communication plan for the ICES network.

	quality management system, ensure effective feedback mechanisms to identify needed improvements and highlight existing good practice.	benefits of having a large number of expert groups, organisations, and individuals participating in this process is the high level of innovation displayed. However, the downsides of this can include a lack of knowledge about what other work is being done by other people and a lack of coordination in harnessing this work.			
d	Use the quality management system to evaluate current activities.	Identify gaps and create a plan to fill them. Prioritise issues, identify unnecessary duplication of activities, and propose remedies.	3.1, 3.2, 3.3	3 years	
e	Operationalise the quality tools and processes that were proposed during the previous 3-year cycle of PGDATA.	PGDATA has previously proposed a number of interesting tools and processes to improve the data informing the assessment and advice process. With the new RDBES/TAF system becoming fully operational over this next work cycle, this is an ideal time to embed these within the workflow. To this end, the next 3-year cycle should also ensure that these ideas are operationalised.	3.1, 3.2, 3.3	3 years	The finalised "Series of ICES Sampling Protocols" template proposed by PGDATA for fisheries dependent data. Documents (based on the temple) describing commercial sampling programs have been created by countries. The process to link the completed documents to data submitted to the commercial fisheries Regional Database & Estimation System (RDBES) is agreed. The procedure to make these documents available to stock assessment groups via the RDBES and Transparent Assessment Framework (TAF) has been agreed and tested. Structure and maintenance of PGCCDBS repository is agreed RDBES/TAF script and tools repository

Summary of the Work Plan

YEAR 1	ToR a) and b)
	• Collate existing policies that relate to the quality of ICES advice and identify any gaps.
	• Agree on a format for the ICES quality manual and which ICES publication type it fits best
	• Create a first draft an ICES quality manual for the advisory process – the purpose of the manual is to document the overall approach to quality management of advice within ICES. The working group will not be looking to invent multiple new procedures but will instead concentrate on compiling and collating the existing procedures into a coherent whole.
	• Identify the types of generic processes within ICES that contribute to advice outputs.
	ToR c)
	• Outline a communication plan for the 3-year cycle of the working group.
	• Identify key stakeholders that should be prioritised

	• Identify the key messages that should be communicated
	ToR d)
	• Limited activity expected in year 1
	ToR e)
	• Identify if are all data collected and used for advice purposes are covered by an identified sampling protocol (e.g. the Series of ICES Sampling protocols used for surveys, and the PGDATA proposed "Series of ICES Sampling Protocols" for fisheries dependent data)
	• Finalise the "Series of ICES Sampling Protocols" template for fisheries dependent data and encourage countries to start using it.
	• Investigate the feasibility of a "species identification" app and other ideas produced by PGDATA
	• Review status of the PGCCDBS (Data Quality Assurance) repository and agree on the way forward.
	• Review draft ICES advice and RDBES data calls and give feedback
YEAR 2	**ToR a) and b)**
	• Revise draft ICES quality manual in line with feedback
	• Define what documentation is needed for the processes that contribute to ICES advice (such as process flows, standard operating procedures, guidelines, and manuals). Propose tools such as standard templates when required
	• Propose who will need to complete the documentation e.g. a benchmark assessment group.
	ToR c)
	• Review and refine communication plan
	• Identify key targets for year 2 and year 3, alongside the stakeholders identified for Year 1
	ToR d)
	• Use the quality management system described in the quality manual to identify gaps in processes
	• Begin identifying new or revised tools or processes that can fill the identified gaps. Tools could refer to code but might also could be "soft" items such as decision support flow-charts. The group would not intend to create all the identified tools ourselves.
	ToR e)
	• Start to create a collection of useful data quality, scripts, graphs and function that can be used within the RDBES/TAF. Design processes that will allow people to contribute to this work. Agree how this work fits with the PGCCDBS (Data Quality Assurance) repository and how it will be maintained.
	• Review draft ICES advice and RDBES data calls and give feedback
YEAR 3	**ToR a) and b)**
	• Revise draft ICES quality manual in line with feedback
	• Track and review the documentation.
	ToR c)
	• Refine year 3 of the communication plan and implement it
	ToR d)
	• Use the quality management system described in the quality manual to identify gaps in processes
	• Continue identifying new or revised tools or processes that can fill the identified gaps
	ToR e)
	• Promote the data quality and RDBES/TAF repository/ies.
	• Review draft ICES advice and RDBES data calls and give feedback

Supporting information

Priority	Improving quality assurance processes is a key priority for ICES and is a priority area of the ICES Advice Plan – the work of this group is thus considered as 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. WGQuality builds extensively on experiences gained within PGDATA and PGCCDBS. 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. The participants at WGQuality should represent the entire process from data collection (fisheries dependent and independent data) to the publication of objective and independent advice.
Secretariat facilities	SharePoint and meeting room requirement.
Financial	No financial implications.
Linkages to ACOM and group under ACOM	There will be strong linkage with ACOM
Linkages to other committees or groups	The work within this group is very relevant to the groups within the FRSG and forthcoming DSTSG (particularly WGCATCH, WGBIOP and WGRDBESGOV). This work will also be relevant to groups within the IEASG, in particular since a wide variety of data sources will be contributing to the outputs of those groups.
Linkages to other organizations	There is a natural link to similar issues of quality assurance in the EU Regional Coordination Groups.

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

2020/FT/DSTSG07   A **Working Group on Estimation with the RDBES data model (WGRDBES-EST)**, chaired by Kirsten Birch Håkansson, Denmark; and Nuno Prista, Sweden; will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2021	20-24 September	Online	Interim report by 18 December to DSTSG	Kirsten Birch Håkannson, Denmark
	25 November	Online		
	15 December	Online		Nuno Prista, Sweden
Year 2022	10-14 October	Tartu, Estonia	Interim report 28 October to DSTSG	
Year 2023	16-20 October	ICES HQ, Copenhagen, Denmark	Final report by 30 October to DSTSG	

ToR descriptors

ToR	Description	Background	SCIENCE PLAN CODES	Duration	EXPECTED DELIVERABLES
a	Develop and document R scripts and functions for statistical estimation using the RDBES data format	The Regional Database & Estimation System (RDBES) will be extensively used by ICES member states, the EU Regional Coordination Groups, and ICES expert groups to store detailed commercial fisheries sample data. The RDBES will also replace the current ICES Inter-Catch 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. WKRDB-EST (1&2) have started developing those scripts and functions in what regards the simpler forms of design-based estimation. WGRDBES-EST will continue and finalize that work, extending it to more complex statistical estimation methods.	3.1, 3.2, 3.3	Regular activity every year with intersessional work	Documented R-scripts and functions to be added to icesRDBES package
b	Identify and document any problems with RDBES data model relating to statistical estimation	In coming years the RDBES data model will keep being improved and updated as feedback is received from RCGs, EGs (e.g., WGCATCH, WGBYC) and national users. The implications of those improvements and updates for estimation within the RDBES will need continuous evaluation. In addition new aspects will likely be found requiring incorporation in the data	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

		model 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.			
c	Coordinate the peer-review and inclusion of ToR a) outputs in the icesRDBES package	Worldwide availability and systematic code and methodological peer review of RDBES estimation functions and scripts may be achieved by incorporation of main estimation functions in the icesRDBES package and publication on CRAN (https://cran.r-project.org/).	3.1, 3.2, 3.3	Regular activity every year with intersessional work	IcesRDBES package and associated peer-reviewed documentation
d	Establish a road forward to the improvement of estimates of commercial catches used in ICES assessments	As the work of WGRDBES-EST progresses there is a need to update and inform WGRDBESGOV on the best path forward to keep improving commercial catch estimates used in 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
e	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 WKRDB-EST2 progress alongside results achieved intersessionally, and identify the R-code that needs development, refinement and/or testing. Develop that code and functions.
	ToR b) 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 c) Continue the work started during WKRDB-EST2 in icesRDBES package, incorporating existing developments; prepare a standalone icesPackage; test and implement compatibility of the icesRDBES package with CRAN requirements; suggest a work-flow and roadmap for peer-review of icesRDBES functions and scripts.
	ToR d) evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV.
	ToR e) Initiate 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 that needs development, refinement and/or testing. Develop that code and functions.
	ToR b) 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 c) Continue the work on the icesRDBES package; test and implement compatibility of the icesRDBES package with CRAN requirements; test work-flow and advise on roadmap for longer term icesRDBES maintainence to WGRDBESGOV.
	ToR d) evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV.
	ToR e) 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 that needs development, refinement and/or testing. Develop that code and functions.
	ToR b) 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 c) Continue the work of previous year in icesRDBES package, incorporating new developments; Publish the icesRDBES package on CRAN.
	ToR d) evaluate progress obtained in estimation of commercial catches and suggest a way forward to WGRDBESGOV.
	ToR e) 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 algoritm 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.

Working Group on Biological Parameters (WGBIOP)

2020/FT/DSTSG10 The **Working Group on Biological Parameters** (WGBIOP), chaired by Annelie Hilvarsson, Sweden; Maria Cristina Follesa, Italy; and Sally Songer, United Kingdom; will work on the ToRs and generate deliverables as listed in the tables below.

	Meeting dates	Venue	Reporting details	Comments (change in chair, etc.)
Year 2021	5 – 7 October	Online meeting	Interim report by 15 November to DSTSG	
Year 2022	3 – 7 October	Gothenburg, Sweden	Interim report by 15 November to DSTSG	
Year 2023	23 – 26 October	To be determined	Final report by TBD to DSTSG	

ToR descriptors

ToR	Description	Background	Science plan codes	Duration	Expected deliverables
a	Plan and prioritise validation studies, workshops, and exchange schemes on stock-related biological variables, and review the results.	Reviewing and prioritisation of the many incoming suggestions for workshops and exchanges from EGs, WKs, and other ICES related groups (e.g. planned benchmarks). It is essential to streamline this work with the ICES benchmark schedule.	3.1 and 3.2	Generic	Annual prioritised overview of planned studies, workshops, and exchanges. Update and restructure the Data Quality Assurance Repository (with ICES and WGQUALITY). Work with SID (Stock Information Database) developers to include workshop and validation study information in SID, to make this information available to the wider ICES community.
b	Improve training and quality assurance of age reading and maturity staging, and other biological parameters.	Guidelines for international calibrations are available, but methods, routines, and protocols for monitoring the quality of	3.1 and 3.2	Generic	Review the current national procedures for quality assurance.

ToR	Description	Background	Science plan codes	Duration	Expected deliverables
		age and maturity on national levels needs to be standardized. International agreed to advice on targets (by stock) for accuracy of delivered biological data as input for assessments. If target is not met, validation should be prioritised.			Outline best practice guidelines in cooperation with the RCGs. Preparing guidelines for method standardization and implementation in co-operation with WGSMART. Continuous monitoring of the implemented standardized guidelines. Stock-specific targets for validation and accuracy of biological parameters achieved from exchanges and workshops. Liaise with WGALES on requirements for egg and larvae quality assurance.
c	Evaluate the quality of biological parameters: Issues and review of quality of biological parameters used in assessments.	It is essential that the time series of biological parameters used in stock assessments are of the highest quality. Guidelines for quality assurance of biological parameters have been developed in WGBIOP's previous terms. WGBIOP will collate information on quality assurance and accuracy estimates of biological parameters used, to evaluate if improvements can be achieved.	3.1, 3.2, and 5.1	3 years	Evaluation of issues put forward by the assessment WGs for benchmark species in 2021–2023. Review use of SID in delivering issue lists for upcoming benchmarks and provision of WGBIOP information to the assessment groups. Interactive quality indicator form for biological parameters used in assessments. Evaluate quality and accuracy estimates of biological parameters currently used in assessments.
d	Investigate and develop data availability, documentation, and methods to improve identified biological parameter estimates as input to assessment models.	Life-history parameters are required by expert groups on assessment, multi-species modelling, ecosystem modelling, and data-limited stocks. Therefore, recent data from quality assured sources is essential. WGBIOP provides guidelines for collecting high-quality data and provides links between data providers and end-users. There is a need to assess the availability and use of	3.1, 5.2, and 6.6	3 years	Document current sources of life-history parameter estimates identified by ICES/GFCM expert groups as critical components relevant to the improvement of assessment for ICES/GFCM stocks. Identify where biological information can be updated, provide input for improving reference points.

ToR	Description	Background	Science plan codes	Duration	Expected deliverables
		biological parameters, and to support incorporating age error matrices and other biological parameter quality information into assessments.			Overview of quality assurance for stomach sampling. Facilitate closer links between data providers and end-users. Liaise with WGQUALITY, benchmark groups, and developers on providing and implementing age error information in assessments.
e	Across database developments combining biological parameter data collection and quality assurance of this data. Address requests for technical and statistical recommendations/advice related to biological parameters and indicators.	WGBIOP regularly receives requests related to (quality of) biological parameters from EGs and other related groups. Filled templates for requests sent to WGBIOP before a specified deadline will be the basis for this ToR. Requests often deal with provision of information or data on the quality of biological parameters which are not easily accessible. To improve the accessibility of the data and the efficiency of the quality assurance processes, cross-database developments are essential. This will allow for combining data from different sources, facilitating the work of WGBIOP and also supporting the ICES quality management system	3.1, 3.2, and 3.3	Generic	Each received request for technical and statistical recommendations related to biological parameters and indicators will be addressed and included in the WGBIOP work plan where appropriate. Provide input for current and developing data storage and tools. Provide a flow diagram, combining outputs from SmartDots and RDBES/TAF/DATRAS to WGQUALITY, DIG and DSTSG. This will give an overview of countries/institutes collecting biological parameter data as input for quality assurance of biological parameters.
f	Provide feedback and guidance on updating and developing tools for exchanges and workshops on biological parameters.	Based on feedback from users of these tools and end-users of results of workshops and exchanges, improvements and alterations will be suggested and evaluated.	3.1 and 4.1	Generic	Annual updates and developments of tools will be evaluated based on end-user needs. Annual overview of suggested improvements based on the needs of users will be provided to governance groups (e.g. WGSMART).

Summary of the work plan

Year 1	Investigation of data availability and quality of life-history parameters and providing links between data providers and end-users. Evaluating the quality of biological parameters used in assessments. Improving quality assurance of biological parameters provided for assessments and management processes. Providing feedback and guidance on the development of tools for calibration workshops of biological parameters. Scheduling of exchanges, workshops, and validation studies aligned with the benchmark cycle.
Year 2	Investigation of data availability and quality of life-history parameters and providing links between data providers and end-users. Evaluating the quality of biological parameters used in assessments. Improving quality assurance of biological parameters provided for assessments and management processes. Providing feedback and guidance on the development of tools for calibration workshops of biological parameters. Scheduling of exchanges, workshops, and validation studies aligned with the benchmark cycle.
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 tools and database developments for providing and accessing biological parameters information. Identify future needs in line with ICES objectives, the ICES Science Plan, and the wider marine environmental monitoring and management within Europe, and propose a future/alternative work plan improving quality assurance of biological parameters.

Supporting information

Priority	The main objective of WGBIOP is 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 very high priority.
Resource requirements	None.
Participants	All National Age Reader/Maturity Stager Coordinators (ICES and GFCM) will be invited. Experts relevant to the current benchmarks of the year of WGBIOP will be invited as well as relevant external experts such as statisticians or specific EG members.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory and science committees	WGBIOP supports ACOM and SCICOM by promoting improvements in the quality of biological parameters from fishery and survey data underpinning the integrated ecosystem assessment approach.
Linkages to other groups	WGBIOP links with the SCICOM/ACOM Steering Groups: Data Science and Technology Steering Group (DSTSG) and Ecosystem Observation Steering Group (EOSG), and the Working Group on the Governance of Quality Management of Data and Advice (WGQuality). It links to stock assessment EGs and benchmark assessment groups by providing input on the data quality. WGBIOP also has links to the Regional Database Steering Group (SCRDB). WGBIOP also has links with WGSMART for the development of SmartDots and WGALES for quality assurance of ichthyoplankton parameters.
Linkages to other organizations	Regional Coordination Groups (RCGs).

EGs dissolved by the end of 2022

Res. Code	EG name	Chairs
2021/WK/DSTSG05	WKRDBES-INTRO - Workshop on introduction to RDBES data submission	Henrik Kjems-Nielsen
2021/WK/DSTSG06	WKRDBESRaiseTAF - Workshop on Raising Data using the RDBES and TAF	Edvin Fuglebakk - Sofie Nimmegeers -
2021/2/DSTSG04	WKRARE - The Workshop on Estimation of Rare Events (to be dissolved after meeting in December 2022)	Kotaro Ono, Norway; and Ana Cláudia Ferndandes, Portugal
2020/WK/DSTSG	WKOISS - Workshop on Operational Implementation of Stomach Sampling (to be dissolved after meeting in November 2022)	Maria Cristina Follesa, Italy
2021/WK/DSTSG07	WKARHOM4 - Workshop on age reading of Horse Mackerel, Mediterranean Horse Mackerel and Blue Jack Mackerel (to be dissolved after meeting in November 2022)	Andrea Massaro - Alba Jurado Ruzafa
2022/FT/DSTSG05	WGALES - Working Group of Atlantic Fish Larvae and Eggs Surveys (WG transferred to EOSG in March 2023)	Maik Tiedemann, Norway - Carolina Giraldo - France - Patrick Polte, Germany