

EOSG Steering Group EGs Resolutions

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WGBEAM - Working Group on Beam Trawl Surveys

2022/FT/EOSG01 The **Working Group on Beam Trawl Surveys** (WGBEAM), chaired by Ingeborg de Boois, the Netherlands, will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
2023	20-23 March 2023	Hafnarfjörður, Iceland	The first interim report by 30 April 2023 to SCICOM and ACOM	Chair: Ingeborg de Boois Additional chair to be defined
Year 2	2024 TBD	TBD		chair to be defined
Year 3	2025 TBD	TBD		chair to be defined

ToR descriptors¹

ToR	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	<p>Coordinate inshore and offshore surveys, in the ICES areas as well as in the Adriatic Sea. Industry surveys are also included.</p> <p>Dates, sampling areas and contact details of key persons are shared in order to</p> <p>(a) identify opportunities for tows on the same location, to support the deltaGAM methodology for index calculation in combining different survey gears.</p> <p>(b) coordinate effort in case of unforeseen circumstances hampering one of the surveys, primarily North Sea</p> <p>(c) Unaggregated beam trawl survey data are stored in DATRAS up and until the survey of the year previous to the meeting year. Data from the year(s) before</p>	3.1	annually	<p>(1) Finalized planning for the inshore and offshore beam trawl surveys, including areas where overlapping tows may occur.</p> <p>(2) Updated ICES database for inshore and offshore beam trawl surveys.</p> <p>(3) Survey summary sheet by region.</p>

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

TOR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
		<p>that, should be checked for completeness (final data submitted)</p> <p>(d) Report on the performance and abnormalities in the inshore and offshore surveys in the past year</p>			
b	Review and if needed update the manuals for offshore and inshore beam trawl surveys	Review and update the survey manuals if needed.	3.1	annual check, finalisation in Year 3	Up-to-date manuals for offshore and inshore beam trawl surveys. If no changes occur over the time period, a time stamp identifying the latest review will be added to the latest version. Otherwise updated manuals will be provided.
c	Evaluate the offshore and inshore beam trawl survey data by region, as well as cross-regionally in a systematic and reproduceable manner. Document inconsistencies, or correct errors or omissions identified.	<p>Evaluation by region will ensure that patterns in the data (e.g. time-series, cohort strength) are clear, even when inter-survey trends contradict.</p> <p>Evaluation across regions will provide insight in the commonalities and differences in e.g. stock dynamics, species abundance and/or length groups in different regions.</p> <p>Evaluation of e.g. species composition, length measurements and litter registrations will ensure that patterns in the data are based on correct data and not due to artefacts.</p> <p>By doing this in a reproduceable manner (R script), the focus can be shifted or extended over the years without re-inventing the wheel. Moreover, traceability of analyses increases.</p> <p>Evaluation of age-based information is relevant for stock assessment. As</p>	3.2, 3.3	annually	<p>(a) Updated, consistent (e.g. species composition, litter coding, consistent species identification in overlapping survey areas) and quality controlled beam trawl survey data are available in DATRAS;</p> <p>(b) Up-to-date R script (github) to evaluate the results by region, and cross-regionally</p>

ToR DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
	almost all final fisheries-independent timeseries are generated by stock assessors themselves, the survey coordination group should make sure that there is sufficient insight prior to stock assessment on the development of age groups over time, regions, and species.			
d Investigate growth patterns in plaice (<i>Pleuronectes platessa</i>), for small fish (day rings) as well for 1+ fish, over the areas.	Dutch research on histological maturation of plaice as well as field observations in the offshore beam trawl survey in the southwestern North Sea show that plaice spawns in August/September in that area. It is unclear if the spawning results in reproduction. Additional data collection will be done, in order to do day-ring analyses for the 0-group plaice. Next to that, growth rates of fish (i.a. plaice) are changing directly affecting the length at age. As stock assessments are age based, a decrease of length at age will affect the available fish within the commercial length range.	3.2, 5.2	Year 3 finalising	Peer reviewed publication on plaice

Summary of the Work Plan

- Year 1
- (1) Compilation of survey summary sheets
 - (2) Provide tabular overview of survey planning, including geographical areas for overlapping tows
 - (3) Data for all beam trawl surveys (inshore and offshore) including litter uploaded in DATRAS for at least the past two years, as far as DATRAS allows the survey data to be submitted. For datasets where index calculation is done directly from DATRAS, as many years of the time-series should be uploaded as is feasible
 - (4) R scripts for and results from the data evaluation by region as well as across regions
 - (5) If relevant, updated inshore and offshore survey manual at sharepoint
 - (6) Data collection and analyses on growth rates of plaice

Year 2	<ol style="list-style-type: none"> (1) Compilation of survey summary sheets (2) Provide tabular overview of survey planning, including geographical areas for overlapping tows (3) Data for all beam trawl surveys (inshore and offshore) including litter uploaded in DATRAS for at least the past two years, as far as DATRAS allows the survey data to be submitted. For datasets where index calculation is done directly from DATRAS, as many years of the time-series should be uploaded as is feasible (4) R scripts for and results from the data evaluation by region as well as across regions (5) If relevant, updated inshore and offshore survey manual at sharepoint (6) Data collection and analyses on growth rates of plaice
Year 3	<ol style="list-style-type: none"> (1) Compilation of survey summary sheets (2) Provide tabular overview of survey planning, including geographical areas for overlapping tows (3) Data for all beam trawl surveys (inshore and offshore) including litter uploaded in DATRAS for at least the past two years, as far as DATRAS allows the survey data to be submitted. For datasets where index calculation is done directly from DATRAS, as many years of the time-series should be uploaded as is feasible (4) R scripts for and results from the data evaluation by region as well as across regions (5) If relevant, updated inshore and offshore survey manual at sharepoint, and versions ready for review and publication (6) Finalisation of analyses on growth rates of plaice, first draft of peer reviewed publication ready.

Supporting information

Priority	The scientific surveys coordinated by this Group provide major fishery-independent tuning information for the assessment of several fish stocks in the a number of regions. Consequently, these activities are considered to have a very high priority.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group is normally attended by about 12 beam trawl survey experts
Secretariat facilities	Report finalization, support ICES Data Centre with respect to DATRAS-related topics
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	The survey data feed into to the assessments of flatfish stocks, brown shrimp and elasmobranch species carried out by various stock assessment EGs. Linked to ACOM through the quality of stock assessments and management advice.
Linkages to other committees or groups	Outcomes of and data supplied by WGBEAM are relevant to WGML, possibly to BEWG, and integrated ecosystem assessment groups.
Linkages to other organizations	The offshore beam trawl survey data are used in the large fish indicator (OSPAR).

WGNAEO - Working Group on Northwest Atlantic Ecosystem Observations

2022/FT/EOSG02 A Working Group on Northwest Atlantic Ecosystem Observations (WGNAEO), chaired by Philip Politis, USA, and Lindsay Beazley*, Canada, will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2023	June 6-7, 2023	Online meeting	Interim report by 7 July 2023 to Ecosystem Observation Steering Group	Lindsay Beazley (Canada) will replace Don Clark (Canada) as Chair
Year 2024	June 2024	Wood Hole, USA	Interim report by 7 July 2024 to Ecosystem Observation Steering Group	
Year 2025	TBD	Canada	Final report by July 2025 to Ecosystem Observation Steering Group	

ToR descriptors²

ToR	Description	Background	Science Plan codes	Duration	Expected Deliverables
a	Coordinate US and Canadian resource and ecosystem survey strategies for enhanced regional evaluation in the Northwest Atlantic.	Canada and the U.S. are expecting to undertake a coordinated spring bottom trawl survey, which would entail addressing differences in strata design, gear, and ecosystem observations. The main product of this ToR would be an operational plan to coordinate surveys, subject to review by DFO and NEFSC leadership. After implementation of the Plan, the WG would review the coordinated survey activities.	3.1, 3.2	3 years	GIS Shapefile for strata boundaries. Planned sampling intensity by stratum for NEFSC and DFO. Trawl catch sampling objectives by area. Trawl description and coordination plan to ensure consistency in trawl design and survey protocols.

² Avoid generic terms such as “Discuss” or “Consider”. Aim at drafting specific and clear ToR, the delivery of which can be assessed

b	Coordinate and develop access, metadata, and methods for integrating historical Canadian and U.S. trawl survey data to facilitate scientific analyses	With ongoing concerns over the changes in species distribution and changes in species productivity on the Northwest Atlantic shelf, approaches for combining the two nation's datasets would be extremely valuable to regional science and management entities. The purpose here would be to develop data sharing methods and methods for analyzing combined data.	3.1, 3.2, 3.3	3 years	Trawl data set for coordinated survey will be made available with recommendations on how to combine data for joint analyses. Review methods for including trawl and oceanographic data in a combined data set.
c	Collate and review ocean observations collected in the Northwest Atlantic Ocean and conduct gap analyses to inform integrated ecosystem assessments and ecosystem science activities.	There are long-standing oceanographic monitoring programs underway in the Northwest Atlantic Ocean. Under this ToR, the WG will aim to optimize current ocean monitoring activities in support of marine resource management.	3.1, 3.2	3 years	ToR c will focus on optimizing oceanographic data collection for client (e.g., WGNARS) needs, while improving data accessibility in conjunction with ToR B. A sub-group will be established to oversee zooplankton data collection on future coordinated surveys. A technical paper led by ToR c will be published on oceanographic and fisheries data collection on the first coordinated survey.

Summary of the Work Plan

Year 1	The WG will meet and review completed GIS shapefiles, planned sampling intensity, sampling protocols and trawl design for ToR a.). Define data elements for a combined data set for trawl and elements of oceanographic data. Review options and select a mode for making Trawl survey data available as a combined data set (ToR b). ToR c will focus on optimizing oceanographic data collection and accessibility, and identify and establish strong linkages with client (e.g., WGNARS, CAUSES) needs. A ToR c zooplankton subgroup will be established that will outline the selection process for dual tows on future coordinated surveys, in conjunction with the activities of ToR a.
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Year 2	The WG will complete the trawl survey coordination plan and deliver to U.S. and Canadian leadership for review (ToR a). The WG will also make recommendations as to combining data for joint analyses (ToR b). The ToR c will establish a pathway for additional inter-comparative analyses to evaluate the differences between bongo vs. ring net tows with a focus on identifying species/taxa that could be combined across the northwest Atlantic.
Year 3	The WG will review status of coordinated surveys (ToR a). Trawl survey data will be made available either jointly or with described methods on how to combine (ToR b). A technical paper describing oceanographic and fisheries data collection on the first coordinated survey led by ToR c will be published.

Supporting information

Priority	High priority. The ToRs of this working group are closely aligned with a number of the observation and exploration priorities described in the ICES Science Plan. Additionally, this expert group will conduct survey coordination, data complication, and oceanographic information that will aid WGNAM to assess environmental and ecosystem effects on mackerel stock dynamics.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group will be attended by 15-25 members.
Secretariat facilities	WebEx Coordination may be requested
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	There are no immediate linkages but developing the expertise could link to ACOM in the future especially WGNAM.
Linkages to other committees or groups	There is a very close working relationship WGNARS. In addition connections will be developed with WGOH and other EOSG groups including WKUSER 1 and 2.
Linkages to other organizations	There are linkages to a number of organizations and institutions throughout the western North Atlantic engaged and interested in ecosystem observations including academic, government, non-governmental organizations, and marine industries.

WGIDEEPS - Working Group on International Deep Pelagic Ecosystem Survey

2022/FT/EOSG03 A Working Group on International Deep Pelagic Ecosystem Surveys (WGIDEEPS), chaired by Hannes Höffle, Norway, and Matthias Bernreuther, Germany, 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	May 2023	To be decided	Interim report by Date Month May to ACOM-SCICOM	Hannes Höffle and Matthias Bernreuther will continue as chairs (Hannes Höffle until Summer 2023).
Year 2024	TBD January/February	To be decided	Interim report by 1 March 2024 to ACOM-SCICOM	
Year 2024	TBD August	To be decided	Interim report by 10 September 2024 to ACOM-SCICOM	
Year 2025	TBD January/February	To be decided	Interim report by 1 March 2022 to ACOM-SCICOM	
Year 2025	By correspondence		Final report by 15 September 2022 to ACOM-SCICOM	

ToR descriptors³

ToR	Description	Background	Science plan codes	Duration	Expected Deliverables
a	Update former SISP 11, incorporating the Norwegian Sea survey, and publish in TIMES	So far, the Norwegian Sea survey on pelagic <i>Sebastes mentella</i> has not been incorporated into the IDEEPS SISP 11.	3.2	Year 1 (2023)	Updated TIMES survey protocol1
b	Finalise transfer of trawl survey data from international deep pelagic ecosystem surveys coordinated by the group to ICES DATRAS or Acoustic Trawl Survey databases	Data is now stored by individual nations/participants. ICES has committed to a fully transparent and documented quality assurance framework for all data products and assessment results derived from data collated within the ICES working groups, this underpins agreements with all the recipients of ICES advice.	3.2	Year 1 (2023)	Inclusion of data in DATRAS or Acoustic Trawl Survey database

³ Avoid generic terms such as “Discuss” or “Consider”. Aim at drafting specific and clear ToR, the delivery of which can be assessed

c	Coordinate the international deep pelagic ecosystem survey with special emphasis on redfish to be carried out in the Irminger Sea and adjacent waters in June/July 2024	The WG has been responsible for the planning of the international trawl/acoustic surveys on pelagic redfish (<i>Sebastes mentella</i>) in the Irminger Sea and adjacent waters since 1994 and producing reports on the survey results and outcomes.	3.1, 3.2	Year 2 (January/ February meeting)	WGIDEEPS 2024 – 1 report chapter 1 March 2024 SCICOM
d	Report on the outcome of the Irminger Sea survey	a) Provide sound, credible, timely, peer-reviewed, and integrated scientific advice on fishery management and the protection of the marine environment. b) Redfish indices are being used by assessment working groups.	3.1, 3.2	Year 2 (August meeting)	WGIDEEPS 2024 – 2 report chapter 1 September 2024 SCICOM
e	Coordinate the international deep pelagic ecosystem survey with special emphasis on redfish to be carried out in the Norwegian Sea and adjacent waters in August 2025	The WG has been responsible for the planning of the international trawl/acoustic surveys on pelagic redfish (<i>Sebastes mentella</i>) in the Norwegian Sea since 2008 and corresponding reports on the survey results.	3.1, 3.2	Year 3 (January/ February meeting)	WGIDEEPS 2025 – 1 report 1 March 2025 SCICOM
f	Report on the outcome of the 2025 Norwegian Sea survey	a) Provide sound, credible, timely, peer-reviewed, and integrated scientific advice on fishery management and the protection of the marine environment. b) Redfish indices are being used by assessment working groups.	3.1, 3.2	Year 3 (September meeting)	WGIDEEPS 2025 – 2 report chapter 15 September 2022 SCICOM

Summary of the Work Plan

Year 1	Carry out ToR a-b
Year 2	Carry out ToR c-d
Year 3	Carry out ToR e-f

Supporting information

Priority	Essential, primary basis for the advice on the stock status of pelagic redfish in the Irminger Sea and adjacent waters and in the Norwegian Sea.
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Resource requirements	N/A
Participants	Less than 12 participants (incl. the cruise leaders of each vessel and the principle experts involved in abundance and biomass calculations and deep sea ecology).
Secretariat facilities	N/A
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	NWWG, AFWG, WGDEC
Linkages to other committees or groups	SCICOM, WGOH, WGBIODIV, WKFAST, WGISDAA, ICES data centre
Linkages to other organizations	NAFO, NEAFC

WKMADE - Workshop on Mackerel Daily Egg production

2022/WK/EOSG04 The **Workshop on Mackerel Daily Egg production (WKMADE)**, chaired by Dolores Garabana*, Spain, and Anders Thorsen*, Norway, will be established and will meet in 13–17 November 2023 (start: Monday afternoon, end: Friday lunch) at Vigo, Spain to:

- a) Evaluate the lab procedures used to analyse adult ovary samples. This includes histology screening, staging of post ovulatory follicles (POF, for spawning fraction) and batch fecundity. Alternatives to POF for the estimation of spawning fraction will be explored. ([Science Plan codes: 3.1, 3.3, 5.1](#)).
- b) Look into the calculations of spawning fraction and batch fecundity, and derive a Daily Egg Production Method (DEPM) based estimates of Spawning Stock Biomass (SSB) for each of the four survey years, 2013 to 2022. The accuracy and precision of the newly derived time series of the DEPM method will be compared to the timeseries of the standard Annual Egg Production Method (AEPM) ([Science Plan codes: 3.1, 3.3, 5.1](#)).

WKMADE will report by 5TH January 2024 for the attention of the EOSG, WGMEGS and WGWIDE.

Supporting information

Priority	In recent years questions have been raised as to whether mackerel is a determinate or indeterminate spawner. Work has been carried out by WGMEGS to try to answer this question. A thorough analysis of the information collected is now a necessity. Consequently these activities are considered to have a very high priority.
Scientific justification	For a number of years there has been a debate as to whether mackerel can still be classed as determinate spawner, or should they be reclassified as an indeterminate species. Currently the Annual Egg Production Method, AEPM, is used for mackerel SSB calculations. Since the 2013 triennial survey WGMEGS has been collecting additional adult samples to estimate (Daily Egg Production Method) DEPM adult parameters. It is expected that the workshop will refine the developed methodologies and clarify established calculations for these adult parameter estimation.
Resource requirements	None
Participants	The Group will be attended by some 20–25 survey participants and invited experts.
Secretariat facilities	None.
Financial	No financial implications.

Linkages to advisory committees	ACOM , SCICOM
Linkages to other committees or groups	WGMEGS, WGWIDE, WGALES, WGACEGG, WGBIOP
Linkages to other organizations	None

WGACEGG - Working Group on Acoustic and Egg Surveys for small pelagic fish in NE Atlantic

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

Resolutions approved in 2021

IBTSWG – The International Bottom Trawl Survey Working Group

2021/FT/EOSG01 The **International Bottom Trawl Survey Working Group (IBTSWG)**, chaired by Pia Schuchert, Northern Ireland and Jim Ellis, UK, will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2022	4-8 April	Online Meeting	Report by 20 May 2022 to EOSG	Outgoing: Ralf van Hal (Netherlands) and Pascal Laffargue (France). Incoming: Pia Schuchert, Northern Ireland and Jim Ellis, UK
Year 2023	27-31 March	Lysekil, Sweden	Report by 30 April 2023 to EOSG	
Year 2024			Report by 20 May 2024 to EOSG	

ToR descriptors

TOR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	<p>Coordination and reporting of North Sea and Northeastern Atlantic bottom trawl surveys, including appropriate field sampling in accordance to the EU Data Collection Framework.</p> <p>Review and update (where necessary) IBTS survey manuals in order to achieve additional updates and improvements in survey design and standardization. (ACOM)</p>	<p>Intersessional planning of Q1, Q3 and Q4 surveys; communication of coordinators with cruise leaders; combining the results of individual nations into an overall survey summary.</p> <p>Intersessional activity, ongoing in order to improve survey and manuals quality.</p>	3.1, 3.2	Recurrent annual update	<p>1) Survey summary including collected data and description of alterations to the plan, to relevant assessment WGs and other EGs (WGCSE, WGNSSK, HAWG, WGBIE ,WGDEEP, WGWIDE, WGEEL, WGCEPH, WGEF, WGML) and SCICOM.</p> <p>2) Indices for the relevant species to assessment WGs (see above)</p> <p>3) Planning of the upcoming surveys for the survey coordinators and cruise leaders</p> <p>4) Updated version of survey manual, whenever substantial changes are made.</p>
b	<p>Address DATRAS-related topics in cooperation with DGG: data quality checks and the progress in re-uploading corrected datasets, quality checks of indices calculated, and prioritizing further developments in DATRAS. (ACOM)</p>	<p>Issues with data handling, data requests or challenges with re-uploading of historical or corrected data to DATRAS have been identified and solutions are being developed</p>	2.1, 3.1	Multi-annual activity.	<p>Prioritized list of issues and suggestion for solutions and for quality checking routines, as well as definition of possible new DATRAS products, submitted to DATRAS group at ICES.</p> <p>Annual check of recent survey data.</p>

c	Develop a new survey trawl gear package to replace the existing standard survey trawl GOV. (SCICOM)	<p>The divergence in the GOV specification from the one given in the survey manual due to historical drift and technical creep has been acknowledged by the group (IBTSWG 2015). Furthermore, the deviation from the specification contained in the manual and between users has widened to the point where it will never be reversed. Therefore, the preferred option is to maintain the status quo of national GOV specifications and develop a new survey trawl package to replace the GOV.</p>	3.1, 3.2	3 years	<p>Final design(s); Full documentation of the gear, and how it should be rigged and operated at sea. Roadmap for implementing the gear in the ongoing survey. This will be developed at the WKFDN workshop as well as WKUSER 2 with support from WGSDAA and FTFB. There will also be linkages with the relevant assessment groups using IBTS data (WGNSSK, WGCSE, WGBIE, , WGWIDE, WGEF).</p>
		<p>A number of IBTS members are due to replace vessels in the next few years and this provides an opportunity to review time-series and undertake inter-calibration trials between the GOV and a new trawl. A further driver for a new gear has been highlighted by the Celtic Sea area where the necessity to optimize sampling opportunities are not been provided by the GOV. In parallel with trawl development the process of replacing the GOV will need to be defined with reference to continuing the assessments and existing time-series.</p> <p>(For this ToR, the IBTS WG seeks support from gear technology experts and welcomes their advice and input into the development of the new survey gear package)</p>			

d	<p>Evaluate the current survey design and explore modifications or alternative survey designs, identifying any potential benefits and drawbacks with respect to spatial distribution and frequency of sampling. Consider the effects of enforced changes in the distribution of survey stations (e.g. in relation to MPAs and offshore industries). Explore potential additional data collection, e.g. stomach sampling and tagging (SCICOM) and engage with the Workshop on Pilot North Sea Fisheries Independent Regional Observation (WKPilot NS-FIRMOG).</p>	<p>The requirements for the surveys are continuously evolving. Additional information, like dietary data, are also required, while reductions in other parts being sampled might be possible and wished for in relation to ethical discussions. New techniques, like eDNA sampling, might be relevant to add to the surveys. Furthermore, the ecological footprint of the survey (fuel consumption, bottom impact, impact in MPAs) is a topic having potential consequences for the current survey design.</p>	3.2	1-3 years	<p>Resources permitting, stomach sampling program to be included in the NS-survey and in draft for the other regions</p>
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e	<p>Making data from IBTS available to be used by different ICES end-users, such as assessment groups, OSPAR and others.</p> <p>Establish a communication with end user groups as to the needs of the users and the data available within DATRAS. Collate a user document that outlines the important caveats in the data with regards to non-target species (e.g. when a non-target species was first recorded as a species, the confidence in sampling). Establish a continued working relationship between user groups and survey group.</p>	<p>IBTS/DATRAS has got a wealth of data, which might be used in a number of applications. Originally set up to collect data on target species, data on other species and environmental factors were often collected (sometimes sporadically), and the identification to species-level of some taxa has been dependent on the available time, the SIC at the time and the knowledge of the team. Using data without previous knowledge on all these factors could result in invalid assumptions. To get the most value out of the surveys, there needs to be a clear communication established with data users and the survey team.</p> <p>Often the current SIC or survey team does not even know how the data were collected historically. It is important to get a deeper understanding of the historic processes and how to progress into the future.</p>	<p>Multi-annual project</p>	<ol style="list-style-type: none"> 1. Establish closer coordination and communication channels with user groups and possible user groups: how do they use the data, how can we enhance the value of the data, what questions do arise? 2. In which format should (historical) documentation be provided? Establish a guideline with user groups. What is actually being read, what is important. 3. Create a more detailed chronology of historical and contemporary surveys, with this being a 'live document' (to be taken forward) about survey data capabilities and issues. 4. Enable users to interact with the survey team to establish new possibilities, e.g. use the data for multispecies analysis, biodiversity questions. Also a personal link between users and survey people will enable the users to form specific requests or propose
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collaborative
work.

Summary of the Work Plan

Year 1	Develop a roadmap for the implementation of the new survey gear (ToR c) ; Develop a stomach sampling program for the NS-IBTS and drafts for the other regions (ToR d).
Year 2	Start the implementation of the roadmap for the new survey gear (ToR c); Depending on the outcomes of stomach sampling during the North Sea IBTS in year 1, and the resources available, refine and extend the stomach sampling programme as appropriate.
Year 3	Continue the roadmap of the new survey gear.
Recurrent annual activity	Updates for ToRs a, and b and initiate and updates for ToR e.

Supporting information

Priority	Essential. The general need for monitoring fish abundance using surveys is evident in relation to fish stock assessments, and it has increasing importance in relation to MSFD GES descriptors, including biodiversity, foodwebs, populations of commercially exploited fish species, sea floor integrity and marine litter.
Resource requirements	A 5-day IBTS meeting. Prepared documents from members following ToR Leaders identified above. 8-day Chair's time to edit. It is estimated that each ToR will require at least 8 hours of preparation.
Participants	The Group is normally attended by some 25–30 members and guests.
Secretariat facilities	SharePoint plus normal secretariat support.
Financial	No financial implications.
Linkages to ACOM and group under ACOM	ACOM. IBTS indices are used in the assessment of multiple stocks.
Linkages to other committees or groups	There are relations with other bottom-trawl surveys (WGBEAM, WGBIFS) that also use DATRAS as the international repository for its data (WGDC, DIG). There are also linkages with Assessment WGs using IBTS indices. Also relevant to the Working Group on Ecosystem Effects of Fishing Activities (WGECO) , the Working Group on Improving use of Survey Data for Assessment and Advice (WGISDAA), Working Group on Integrating Surveys for the Ecosystem Approach (WGISUR), Working Group on Biodiversity Science (WGBIODIV) and the Workshop on Pilot North Sea Fisheries Independent Regional Observation (WKPilot NS-FIRMOG).
Linkages to other organizations	IOC, GOOS, OSPAR, Regional Coordination groups (DCF).

WGIPS – Working Group of International Pelagic Surveys

2021/FT/EOSG02 The Working Group of International Pelagic Surveys (WGIPS) , chaired by Susan Maersk Lusseau, Denmark, will meet to work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2022	24–28 January	Online Meeting	Interim report by 7 March 2022 to EOSG, SCICOM & ACOM	Incoming chair Susan Maersk Lusseau. Outgoing: Bram Couperus and Michael O’Malley
Year 2023	23–27 January	Belfast, Ireland	Interim report by 24 February 2023 to EOSG, SCICOM & ACOM	
Year 2024	22–26 January	Faroe Islands	Final report by 11 March 2024 to EOSG, SCICOM & ACOM	

ToR descriptors

ToR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Combine and review annual ecosystem survey data to provide: indices of abundance and spatial distribution for the stocks of herring, sprat, mackerel, boarfish and blue whiting in Northeast Atlantic waters.	a) Advisory Requirements b) Requirements from other EGs	3.2	years 1–3	Survey reports containing indices of stock biomass and abundance at age, spatial distributions of stocks and hydrographic conditions. Survey summary tables delivered to: HAWG, WGWIDE
b	Coordinate the timing, area and effort allocation and methodologies for individual and multinational acoustic surveys on pelagic resources in the Northeast Atlantic waters covered (Multinational surveys: IBWSS, IESNS, IESSNS, HERAS, and individual surveys: CSHAS, ISAS, ISSS,	a) Science Requirements b) Advisory Requirements c) Requirements from other EGs d) follow-up of WKPilot NS-FIRMOG	3.1	years 1–3	Cruise plans for international and individual surveys.

PELTIC, GERAS, WESPAS, 6aSPAWN)					
c	Adopt standardized analysis methodology and data storage format utilizing the ICES acoustic database repository for all acoustically derived abundance estimates of WGIPS coordinated surveys	a) Science Requirements b) Advisory Requirements	3.2	years 1–3	Progress on the adaption of standardized analysis methodology and data storage format utilizing the ICES pelagic acoustic database repository for WGIPS coordinated surveys.
d	Periodically review and update the WGIPS acoustic survey manual to address and maintain monitoring requirements for pelagic ecosystem surveys	a) Science requirements b) Advisory requirements	3.1	years 1–3	Updated WGIPS survey manual in TIMES format.
e	Review the work, and report of workshops organised by WGIPS and develop formal ICES recommendations. This should include TIMES manual updates and adopting changes to survey coordination where deemed appropriate.	a) Science requirements b) Advisory requirements	3.1	years 1–3	Integrate results from WGIPS workshops into survey protocols where possible. Develop formal recommendations to other groups and agree answers to recommendations from other groups.
f	Review and evaluate survey designs across all WGIPS coordinated surveys to ensure the integrity of survey deliverables.	a) Science requirements b) Advisory Requirements c) Requirements from other EGs	3.1, 3.3	years 1–3	Optimize and harmonise sampling designs and precision estimates for the different surveys to ensure survey quality.
g	Assess and compare scrutinisation procedures employed for the analysis of raw acoustic data from WGIPS coordinated surveys	a) Science requirements b) Advisory requirements	3.2, 3.3	year 1-3	Documented standardised scrutinisation recommendations; Update of survey manual to address and maintain monitoring requirements for pelagic ecosystem surveys.
h	Collaborate with groups wishing to	a) Science requirements	3.2	Years 1-3	Facilitate testing and developing forecast models

	utilize available time-series from WGIPS coordinated surveys.				provided by WGS2D. Make time-series data available for MEESO.
i	Assess developing pelagic ecosystem surveying technology (e.g. optical technology, multibeam and wideband acoustics) to: (i) achieve monitoring of different ecosystem components, and/or (ii) give input to the development of ecosystem indicators from surveys covered by WGIPS, (iii) continue to support the development of tools to improve the accuracy and precision of survey estimates.	a) Science Requirements b) Advisory Requirements c) Requirements from other EGs	3.1, 3.3, 4.1	years 1–3	Update ecosystem metrics that are collected by WGIPS coordinated surveys; and protocols/recommendations for practical implementation of new technologies.
j	Continued development of trawl sampling and hull mounted acoustic data collection during IBWSS surveys to support the routine reporting of mesopelagic fish abundance and distribution within established limitations. Leverage latest research from ongoing research projects (MEESO & SUMMMER) to improve data quality and reporting capacity	a) Science Requirements b) Advisory Requirements c) Requirements from other EGs	3.1, 3.4,	years 1–3	Ultimate goal is the routine reporting of mesopelagic fish abundance and distribution as part of the IBWSS survey and uptake by other candidate surveys within WGIPS. Upload of biological and acoustic data to the ICES trawl acoustic database. Provision of data to interested WGs and research projects.

Summary of the Work Plan

General meeting, preceded by 3 post-cruise meetings which collate data of multinational surveys.

Year 1

Session to review and evaluate survey designs across all WGIPS coordinated surveys and coordinate planning and discuss designs for surveys taking place in Year 1.

Review the WGIPS acoustic manual in the TIMES format.

Session to assess auxiliary pelagic ecosystem surveying technology focusing on methods currently used to monitor different ecosystem components across WGIPS coordinated surveys.

Session on the future and development of databases (more specifically the ICES DB and the PGNAPES database), use of StoX and progress on TAF.

Session on mesopelagic sampling: Review and feedback of sampling carried out in 2021. Update on reports from MEESO and SUMMER projects and workshops.

Session on stock discrimination projects and the consequences for biological sampling on WGIPS surveys.

Delivery of a WD on biological sampling strategies on HERAS surveys over time. Session on biological sampling strategies in WGIPS surveys

Conduct a workshop on biological sampling strategies in WGIPS surveys.

Year 2

General meeting, preceded by 3 post-cruise meetings which collate data of multinational surveys.

Session to review and evaluate survey designs across all WGIPS coordinated surveys and coordinate planning and discuss designs for surveys taking place in Year 2.

Review the WGIPS acoustic manual in the TIMES format, prepare for submitting for external review.

Session to assess auxiliary pelagic ecosystem surveying technology focusing on methods currently used to monitor different ecosystem components across WGIPS coordinated surveys.

Session on the future and development of databases (more specifically the ICES acoustic database and the PGNAPES database), use of StoX and progress on TAF.

Session on mesopelagic sampling: Review and feedback progress of trawl sampling and acoustic sampling methods used.

Session on stock discrimination and the consequences for biological sampling on WGIPS surveys.

Session on biological sampling strategies in WGIPS surveys

Year 3

General meeting, preceded by 3 post-cruise meetings which collate data of multinational surveys.

Session to review and evaluate survey designs across all WGIPS coordinated surveys and coordinate planning and discuss designs for surveys taking place in Year 3.

Review the WGIPS acoustic manual in the TIMES format, submit for publishing.

Session to assess auxiliary pelagic ecosystem surveying technology focusing on methods currently used to monitor different ecosystem components across WGIPS coordinated surveys.

Session on the future and development of databases (more specifically the ICES acoustic database and the PGNAPES database), use of StoX and progress on TAF.

Session on mesopelagic sampling. Update the group on progress of sampling and reporting of mesopelagic fish resources.

Session on stock discrimination and the consequences for biological sampling on WGIPS surveys.

Session on biological sampling strategies in WGIPS surveys

Supporting information

Priority	The Group has a very high priority as its members have expertise in design and implementation of acoustic-trawl surveys, including sampling of additional ecosystem parameters. It will therefore directly contribute to the implementation of integrated pelagic ecosystem monitoring programmes in the ICES area. The Group's core task is the standardisation, planning, coordination, implementation, and reporting of acoustic surveys for the main pelagic fish species including herring, sprat, blue whiting, mackerel, and boarfish in Northeast Atlantic waters. The work provides essential data in the form of survey indices to WGWISE and HAWG in the aim to perform integrated ecosystem assessment.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group is normally attended by some 20–25 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	WGWISE, HAWG
Linkages to other committees or groups	There is a very close working relationship with other groups in EOSG and DSTSG, especially relevant links to WGAcousticGov, WGACEGG, WGALES, WGBIFS, WGFASST, WGFTFB, WGSDAA, WGISUR, WGMEGS, WGTC, WGINOR, WGINOSE, WGIAB, WKEVAL, WKMSMAC2, WKSCRUT, WKSUREQ, WGS2D, WKPIlot NS-FIRMOG
Linkages to other organizations	

WGISDAA– Working Group on Improving use of Survey Data for Assessment and Advice

2021/FT/EOSG05 **A Working Group on Improving use of Survey Data for Assessment and Advice** (WGISDAA), chaired by Casper W. Berg, Denmark, will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2022	25-27 October	DTU, Lyngby	Interim report by 24 of November 2022 to ACOM/SCICOM	
Year 2023	TBD	TBD	Interim report by TBD to ACOM/SCICOM	
Year 2024	TBD	TBD	Final report by TBD to ACOM/SCICOM	

ToR descriptors⁴

TO R	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	To work together with assessment working groups to provide resolution to assessment issues prioritized by the assessment working groups	Specific resolutions to individual assessment issues with a report to feedback into the assessment, or where necessary into the benchmark process. In addition, cataloguing and classification of issues and review of methods used to resolve problems in order to provide “self-help” options to resolve similar issues in other assessments.	3.2	Annually	
b	To work together with survey working groups to provide resolution to problems associated with index calculations, survey design changes (proposed or realized) to ensure efficient and effective use of survey resources.	Specific resolutions to individual survey issues with a report to feedback into the survey working group. In addition, cataloguing and classification of issues and review of the methods used to resolve them in order to provide “self-help” options for survey working groups.	3.1, 3.2	Annually	

c	Initiate with ACOM and Secretariat a process to identify upcoming issues associated with the use of survey data in benchmarks.	Survey data issues, as in ToR a, are often critical in the benchmarking process. WGISDAA can advise best if involved in this process from the start of the benchmark process and can collaborate with the operators and present conclusions at the benchmark.	3.2	As required	Reports and presentations to the appropriate Benchmark workshop.
d	Review and evaluate new developments in statistical approaches for analysing survey data, in particular model-based survey indices, and if possible provide guidelines for best practices.	Model-based survey indices are gaining popularity due to their ability to cope with changes in survey design. New and more advanced methods are frequently emerging, but they are often more difficult to apply in practice.	3.2	Annually	

Summary of the Work Plan

YEAR 1	
	All ToRs Review the outcomes of the WKUSER2 workshop and discuss possible future analysis/workshops.
Year 2	All ToRs.
Year 3	All ToRs.

Supporting information

Priority	This group will feed the results of its work directly into the assessment and hence advisory process. As such it should be considered central and of high priority Statistically rigorous approaches are important to ensure best possible science and efficient use of costly survey data.
Resource requirements	The key additional resource requirement is the group needs participation of the key players in the relevant assessment, survey or benchmark group. This would be in addition to work required for the normal operations of these groups. Essentially, this would involve key personnel attending the relevant WGISDAA meeting, and where required, personnel from WGISDAA attending the relevant requesting expert group.
Participants	Dependant on information requests, but normally less than 10 core members
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and group under ACOM	ACOM, Benchmark process and assessment EGs as well as Survey EGs will be the key clients for the work of WGISDAA.

Linkages to other committees or groups	WGISDAA will have strong links to survey working groups under EOSG, and in particular to the work of WGISUR. Given surveys as an important source of wider ecosystem data there will also be important links to groups under IEASG
Linkages to other organizations	None specific

WGNEPS – Working Group on Nephrops Surveys

2021/FT/EOSG06 A Working Group on Nephrops Surveys (WGNEPS), chaired by Jónas Jónasson*, Iceland will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2022	15-17 November	Cádiz, Spain	1 st Interim report by 13 th December to EOSG	Outgoing chair: Jennifer Doyle
Year 2023	TBC	TBC	2 nd Interim report by TBC to EOSG	Incoming chair: Jónas Jónasson
Year 2024	TBC	TBC	Final report TBC	TBC

ToR descriptors 2022 – 2024 cycle

TO R	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Coordination and reporting reviews of any changes to design, coverage and equipment for the various <i>Nephrops</i> UWTV and full-scale trawl surveys.	To ensure surveys used by WGCSE, WGBIE and WGSSK are fit for purpose.	3.1, 3.2	Recurrent annual update	Survey summary including and description of alterations to the plan, to relevant assessment-WGs (WGCSE, WGSSK, WGBIE) and SCICOM. Planning of the upcoming surveys for the survey coordinators and cruise leaders.
b	Develop an international database for <i>Nephrops</i> UWTV survey data which will hold burrow counts, ground shape files and associated data.	There is a need to centralize UWTV data in a single international database. Ensure data is available externally.	3.5	Year 1-3	ICES database

c	Update R scripts for <i>Nephrops</i> UWTV survey data processing including functions to quality control, analyze and visualize data, and interface the tools with the international database for <i>Nephrops</i> UWTV survey data	Improving standardisation of data QC and data processing. Support new developing surveys on data analysis.	3.1, 3.3	Recurrent annual update	Document and R packages for UWTV survey data on GitHub site.
d	To review video enhancement, video mosaicing, automatic burrow detection and other new technological developments applied in <i>Nephrops</i> UWTV surveys.	Periodic review of emerging technologies that might improve survey methodologies.	4.1	Recurrent annual update	Roadmap and publications as appropriate, section update in annual WG report.
e	Review and report on the utility of UWTV and trawl <i>Nephrops</i> surveys as platforms for collecting data for purposes other than <i>Nephrops</i> assessment (e.g. the collection of data for OSPAR and MFSD indicators).	<i>Nephrops</i> UWTV surveys have a role in relation to benthic habitat monitoring and the collection of other environmental and ecosystem variables.	1.5	Year 3	Meetings with data end users and section report
f	Analyse existing data from UWTV and trawl <i>Nephrops</i> surveys to evaluate possible factors affecting burrow emergence of <i>Nephrops</i> (e.g. currents, light, salinity and oxygen)	Recent behaviour aspects have been investigated in the laboratory. Important to investigate correlation with field data.	1.3	Year 1-3	Review paper
g	Review differences of new HD and previous used SD camera systems and its effect on burrow detection, edge effects and bias correction factors, and explore the possibility of HD system tools for providing estimates of burrow size distributions.	Recent changes from SD to HD technology for many survey areas. Important to investigate edge effects and correction factors with field data on burrow system size.	3.3	Year 1-3	Roadmap and publications as appropriate, section update in annual WG report.
h	Update TIMES on next cycle with items from all ToRs.	The group evaluates the TIMES content at least every three years to ensure the information is kept up to date	3.1	Year 3	To update TIMES based on conclusions if necessary. Other publications when appropriate.

Summary of the Work Plan

Year 1	All ToRs will be addressed in this year but the main task in year 1 will be to establish the UWTV database and to provide updated shape files of Nephrops FUs and survey domains (ToR b)
Year 2	All ToRs will be addressed in this year. In addition to this focus will be on ToR e in year 2
Year 3	All ToRs will be addressed in this year. Focus in year 3 will be on new technologies and, if appropriate, an update of the SISP (ToR b) as well on the review of field data on factors affecting burrow emergence and occupancy (ToR f)

Supporting information

Priority	<i>Nephrops</i> are a valuable species whose stocks are potentially susceptible to local depletion. UWTV/Trawl surveys are an integral part of the stock assessment and management advice provided by ICES. WGNEPS is the international co-ordination group for <i>Nephrops</i> surveys focusing on planning, collaboration, quality control and survey development issues. This work is considered 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 15–20 members and guests.
Secretariat facilities	ICES Data Centre
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	This group will feed into the assessment working groups and subsequently on to ACOM as well as to SCICOM
Linkages to other committees or groups	There is a very close working relationship with relevant to stock assessment expert groups that used the survey results i.e. WGCSE, WGBIE and WGNSSK. Close linkage to WGMLEARN (automatic classification systems) and WGDEC (survey data).
Linkages to other organizations	FAO, OSPAR

WGSINS - Working Group on Surveys on Ichthyoplankton in the North Sea and adjacent Seas

2021/FT/EOSG07 The **Working Group on Surveys on Ichthyoplankton in the North Sea and adjacent Seas (WGSINS)**, is chaired by Bastian Huwer, Denmark, and will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2022	29 November – 01 December	Belfast, Northern Ireland	Interim report by 7 January 2023 to ACOM/SCICOM	Incoming Chair Bastian Huwer (DK)
Year 2023	28 November – 01 December	Aberdeen, Scotland	Interim report by 1 January 2024 to ACOM/SCICOM	Bastian Huwer (DK)
Year 2024	TBD			

ToR descriptors

ToR	Description	Background	Science plan codes	Duration	Expected Deliverables
a	Planning and execution of North Sea and adjacent seas ichthyoplankton surveys used for assessment and management purposes	Ichthyoplankton surveys in the North Sea and adjacent Seas deliver abundance data of early life history stages for fish SSB and/or recruitment for assessment of several fish stocks.	3.1, 3.2,	year 1, 2, 3	Survey Plan
b	Provide quality assurance of the survey indices time series to assessment working groups	Consistency in generation of data is a crucial prerequisite for the use of a time series in the assessment.	3.1, 3.2, 5.2	year 1, 2, 3	
c	Update manuals for ichthyoplankton surveys in the North Sea and adjacent seas	Existing manuals should be updated regularly as new information becomes available	3.1	year 3	Updated Times manuals
d	Provide quality assurance of ichthyoplankton identification, including molecular methods	The accurate identification of ichthyoplankton and the developmental stages is crucial for species specific abundance estimates.	3.1, 3.2	year 1, 2, 3	
e	Standardization of sampling and sample processing procedures	Standards of sampling and sample processing procedures need to be optimized w.r.t. efficiency	3.3	year 1, 2, 3	

f	Prepare data for archiving in the ICES eggs and larvae database	WGSINS data need to be prepared and uploaded to the ICES eggs and larvae database by each institute	3.2	year 1, 2, 3	Updated dataset in the ICES eggs and larvae database
g	Assess possibilities for the different ichthyoplankton surveys to supply ecosystem data to support the implementation of an ecosystem approach to fisheries management	Ichthyoplankton surveys are able to provide additional data than needed for the original survey objectives. The acquisition of additional data has to be assessed.	3.1, 3.3	year 3	Provide an overview of current and potential new data collections, in addition to the target species, and their potential uses for ecosystem management

Summary of the Work Plan

YEAR 1	PLAN AND EXECUTE THE INTERNATIONAL HERRING LARVAE SURVEYS IN THE NORTH SEA (IHLS), THE NORTH SEA MIDWATER RING NET SURVEY (MIK), THE DOWNS RECRUITMENT SURVEY (DRS), THE NORTHERN IRISH NORTHEASTERN LARVAE SURVEY (NINEL), THE NORTHERN IRELAND MIK SURVEY (NI-MIK), THE RÜGEN HERRING LARVAE SURVEY (RHLS) AND THE BALTIC ICHTHYOPLANKTON SURVEYS (BIS)
Year 2	Plan and execute the IHLS, the MIK, the DRS, the NINEL, the NI-MIK, the RHLS and the BIS
Year 3	Plan and execute the IHLS, the MIK, the DRS, the NINEL, the NI-MIK, the RHLS and the BIS

Supporting information

Priority	This working group is important for the fisheries advisory process. The different ichthyoplankton surveys in the North Sea and adjacent seas provide important fishery-independent stock and/or recruitment data used in the assessment for herring stocks in the North and Baltic Seas as well as for cod in the Baltic and the Irish Sea, as well as for haddock in the Irish Sea and informs management of whiting in the Irish Sea.
Resource requirements	None.
Participants	The working group is normally attended by 8 – 15 members and guests.
Secretariat facilities	ICES data center
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	HAWG, WGCSE, WGBFAS
Linkages to other committees or groups	EOSG, WGBIOP, IBTSWG, WGALES, WGML, WGZE, DSTSG
Linkages to other organizations	None

Resolutions approved in 2019/2020

WGFTFB - ICES-FAO Working Group on Fishing Technology and Fish Behaviour

2019/FT/EOSG08 The ICES-FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB), chaired by Daniel Stepputtis, Germany, Antonello Sala, Italy and Jon Lansley (on behalf of FAEO), Italy, will meet to work on the following Terms of References (ToRs) and produce deliverables as listed in the following table for the years 2020 through 2023. WGFTFB will report on the activities and findings by 25 June each year to EOSG.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2020	By correspondence		Interim report by 22 May to EOSG	Incoming Chair Daniel Stepputtis, and Antonello Sala Pingguo He Chair on behalf of FAO No online meeting this year only by correspondence
Year 2021	19-23 April	Online meeting	Interim report by 25 June to EOSG	Outgoing: Pingguo He Chair on behalf of FAO Incoming: Jon Lansley, Italy
Year 2022	23 May 2022	Online meeting	Final report by 25 June to EOSG	Regular WGFTFB-meeting. FAO-sponsored meeting, postponed to 2023
Year 2023	13-17 February	Kochi (India)	Final report by 17 March to EOSG	FAO-sponsored meeting. Election of new chair(s)

ToR descriptors

ToR	Description	Background	Science plan codes	Duration	Expected Deliverables
a	Deliberate, discuss and synthesize recent research on topics related to: i) Designing, planning, and testing of fishing gears used in abundance estimation; ii) Selective fishing gears for the reduction of bycatch, discard and unaccounted mortality, especially as they relate to EU Landing Obligation; iii) Environmentally benign fishing gears and methods, iv) Improving fuel efficiency and reduction of emission from fisheries, and v) Summaries of research activities by nation	Through open sessions and focused, multiyear topic groups, the Working Group provides opportunities for collaboratively developing research proposals, producing reports and manuscripts, and creating technical manuals on current developments and innovations.	3.3, 4.5, 5.4	3 Years	ICES report
b	Organize a FAO-sponsored FAO-ICES mini-symposium with thematic issues. Symposium themes will be determined at Year 2, and included in the updated ToR.	Under mutual agreement between ICES and FAO, FAO develops and leads a mini-symposium of relevant topics, while also continuing ICES commitments.	2.1, 4.5, 5.4	Year 3	FAO report, ICES report
c	Organize a Joint Workshop on Fishing Technology, Acoustics and Behavior (JTFAB) to review research topics of mutual interest to both the Working Group on Fishing Technology and Fish Behaviour (WGFTFB) and the Working Group on Fisheries Acoustics, Science and Technology (WGFAST).	Every three years, WGFAST and WGFTFB meet for a one-day Joint workshop on Fishing Technology, Acoustics and Behaviour (JFTAB) to review and share information on topics of mutual interest.	3.2, 4.5, 5.4	Year 1	JFATB report

d	Help organize an international fishing technology and fish behaviour symposium or workshop	The last similar symposium was 13 years ago (2006).	2.1, 4.5, 5.4	Fall 2020	Symposium or workshop with proceedings published in a special issue in ICES JMS
e	Support survey working groups with fishing gear expertise upon request	EOSG has identified gear expertise gaps in survey working groups.	3.2	Year 1,2,3	Report of relevant survey trawl working groups or associated workshop

Summary of the Work Plan

YEAR 1	Produce the annual report; hold joint session with WGFAST; connect to survey WGs
Year 2	Produce annual report; Continue development of relationships with survey WGs
Year 3	Produce the annual report; organize FAO-ICES mini-symposium

Supporting information

Priority	The activities of WGFTFB will provide ICES with knowledge and expertise on issues related to the ecosystem effects of fisheries, especially the evaluation and reduction of the impact of fishing on marine resources and ecosystems and the sustainable use of living marine resources and other topics related to the performance of commercial fishing gears and survey gears.
Resource requirements	The research programmes that provide the main input to this working group already exist, and resources are already committed by individual institutions. FAO has committed to support the WG by sponsoring a WG meeting every third year. There are no additional resource requirements for the EG beyond the secretariat support for group organisation
Participants	The group is normally attended by about 60–100 regular members and chair-invited members. Participation is about 100 - 140 in the year when FAO-ICES mini-symposium is held. The numbers of attendees to the meeting have been growing over the last years.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	Linkages to advisory groups via reports on changes to fleets and fleet effort.
Linkages to other committees or groups	There is a very close working relationship with other groups of EOSG, e.g. WGFAST, and the acoustic survey groups.
Linkages to other organizations	The WG is jointly sponsored with the FAO.

WGACEGG - Working Group on Acoustic and Egg Surveys for small pelagic fish in NE Atlantic

2020/FT/EOSG17 A Working Group on Acoustic and Egg Surveys for small pelagic fish in NE Atlantic (WGACEGG), chaired by Jeroen van der Kooij, United Kingdom and Maria Manuel Angélico, Portugal, will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2020	16 -20 November	Online meeting	Interim report by 11 December 2020 to EOSG	Outgoing Chairs: Maria Santos, Spain and Mathieu Doray, France Incoming Chairs: Jeroen van der Kooij, U.K and Maria Manuel Angélico, Portugal
Year 2021	15-19 November	Online meeting	Interim report 17 December 2021 to EOSG	
Year 2022	14-16 November 2022	Lisbon, Portugal	Final report by 17 December 2022	Select new chairs for net term (2023-2025)

ToR descriptors⁵

TOR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Evaluate and provide echo-integration and/or Daily Egg Production Method (DEPM) estimates for sardine, anchovy horse mackerel, boarfish, herring, and sprat in ICES sub-Areas 6, 7, 8 and 9	a) Data provide backbone of relevant stock assessments for key species at relevant WGs (Advisory Requirements) b) Requirements from other EGs	3.1	annually	Abundance and biomass estimates by age and/or length group . Fish spatial distribution will be provided to WGHANSA, WGWIDE, HAWG by the end of the WGACEGG meeting. Datasets will be published in the ICES repository when available.
b	Analyse sardine and anchovy (adults and eggs), spatial and temporal distribution and their habitats in European waters	a) Surveys collect additional data on the wider ecosystem; interannual variation in sardine and anchovy biomass and distribution will be studied in relation to ecological processes. Science Requirements b) Requirements from other EGs	1.5	Year 2	Aim to publish results in a peer reviewed paper and/or CRR in 2021; with decision to be made following review of results and progress in 2020.

⁵ Avoid generic terms such as “Discuss” or “Consider”. Aim at drafting specific and clear ToR, the delivery of which can be assessed

c	Provide ecosystem data such as temperature, salinity, plankton diversity, top predators abundances, egg densities and backscattering for sardine, anchovy and other small pelagic fish for pelagic ecosystem monitoring (e.g. MSFD)	a) Combining the data from concurrent surveys (e.g. spring) provides improved insight into large scale features potentially affecting local survey observations and will ultimately help improve (understanding of both) the stock assessment and ecosystem dynamics. (Science Requirements) b) Requirements from other EGs	1.4, 1.5	annually	Gridded maps updated every year. Datasets will be published in the ICES repository when available
d	Assess developments in the technologies and data analyses for the application of both acoustics and the DEPM (on egg production or adult parameters).	a) Ensure best practise is applied. Science Requirements b) Advisory Requirements c) Requirements from other EGs	3.3	3 years	Report relevant new methodologies in annual WG report, available to the public one month after the meeting.
e	Improve and assess the suitability of CUFES data for anchovy and sardine egg production estimates in areas 8 and 9.	a) Science Requirements b) Advisory Requirements c) Requirements from other EGs	3.3	3 years	
f					
f	Develop and standardization of data processing methods for DEPM and acoustics for surveys in Atlantic and Mediterranean waters	a) Science Requirements b) Advisory Requirements c) Requirements from other EGs	3.1, 3.2	3 years	Updated data processing protocols shared with the MEDIAS group (Mediterranean acoustic survey group)
G	Provide echo-integration estimates for other species (mainly blue whiting, mackerel, herring, sprat, horse mackerel, chub mackerel and boarfish) ICES sub-Areas 6, 7, 8 and 9	a) Surveys collect additional distribution, abundance and biological data on pelagic fish species, that are not currently used in stock assessment – make available for studies and possible future inclusion in assessment. Advisory Requirements b) Requirements from other EGs	3.5	3 years	Biomass per age group when available otherwise per length classes and spatial density distribution, provided to WGWIDE and HAWG before the WG annual meeting. Datasets will be published in the ICES repository when available.

H	Develop, coordinate and review survey protocols for WGACEGG surveys (DEPM: BIOMAN, SAREVA, PT-DEPM-PIL, BOCADEVA; Acoustic: PELAGO, PELACUS, PELGAS, ECOCADIZ, WESPAS, ECOCADIZ RECLUTAS, IBERAS-JUVESAR, JUVENA, PELTIC, CSHAS)in line with ICES QAQC procedures	ICES aims to have a quality assurance process for data collections used in the provision of advice. One element of this is that all procedures describing the data collection are adequately described.	3.1	annually	Publication of survey manual, TIMES (SISP) for the data collection and product specification conducted under the auspices of WGACEGG (2020); review document annually and, if required, submit new version in 2022 for publication..
I	Compare acoustic and DEPM biomass estimates of anchovy and sardine and evaluate their respective bias and precision with a view to providing improved data to stock assessment WGs	a) Currently, DEPM and acoustic derived indices for anchovy and sardine are presented separately to stock assessment working groups. Data from either methods may be used to interpretate the other method and improve information provided to assessment WGs. Science Requirements b) Advisory Requirements c) Requirements from other EGs	-	3 years	
J	Develop the use of image recognition techniques to characterise the distribution of surface mesozooplankton and possibly microplastics in areas 7, 8 and 9, based on CUFES and/or plankton nets.	a) Science Requirements b) Requirements from other EGs	1.2	3 years	
K	Collaborate with groups wishing to utilize available timeseries from WGACEGG coordinated surveys.	a) Science Requirements	3.2	Years 1-3	Facilitate collaborative activities with WGSPF and other groups, by contributing expertise and data to large scale studies on small pelagic fish.

Summary of the Work Plan

Year 1	<p>Annual meeting, including, if possible, a joint session with MEDIAS (Mediterranean acoustic survey group):</p> <ul style="list-style-type: none"> • Evaluation of echo-integration and/or Daily Egg Production Method (DEPM) estimates for sardine, anchovy horse mackerel, boarfish, herring, and sprat in ICES sub-Areas 6, 7, 8 and 9 • Update of gridded maps of ecosystem data derived from surveys, and assessment of feasibility of production of megafauna and mesozooplankton grid maps for ecosystem assessment • Session on historic data series consolidation and storage • Update of the WGACEGG DEPM and acoustic Survey Protocols (TIMES) if required • Session on acoustic data collection and analysis, including a topic on the analysis of acoustic data in presence of mixed mesopelagic and juvenile anchovies assemblages • Session on DEPM data collection and analysis • Session on comparison of acoustic and DEPM indices • Session on results of the analysis on time series of gridded maps of species-and ecosystem data • Session to analyse progress on sardine and anchovy egg production estimates from CUFES
Year 2	<p>Annual meeting:</p> <ul style="list-style-type: none"> • Evaluation of echo-integration and/or Daily Egg Production Method (DEPM) estimates for sardine, anchovy horse mackerel, boarfish, herring, and sprat in ICES sub-Areas 6, 7, 8 and 9 • Update of gridded maps of ecosystem data derived from surveys, historic data series consolidation and storage • Session on historic data series dissemination and valorisation • Update of the WGACEGG DEPM and acoustic Survey Protocols (SISP) if required • Session on acoustic data collection and analysis • Session on DEPM data collection and analysis • Session on comparison of acoustic and DEPM indices • Session to analyse progress on sardine and anchovy egg production estimates from CUFES
Year 3	<p>Annual meeting, including a joint session with MEDIAS (Mediterranean acoustic survey group):</p> <ul style="list-style-type: none"> • Evaluation of echo-integration and/or Daily Egg Production Method (DEPM) estimates for sardine, anchovy horse mackerel, boarfish, herring, and sprat in ICES sub-Areas 6, 7, 8 and 9 • Update of gridded maps of ecosystem data derived from surveys, historic data series consolidation and storage • Update of the WGACEGG DEPM and acoustic Survey Protocols (SISP) if required • Session on developments in acoustic data analysis • Session on developments in DEPM data analysis • Session on the use of image recognition techniques to characterise the distribution of (surface) mesozooplankton communities • Session on comparison of acoustic and DEPM indices • Session to analyse progress on sardine and anchovy egg production estimates from CUFES

Supporting information

Priority	<p>The current activities of this Group will ensure the provision and the quality of the data provided to ACOM advisory groups in charge of the assessment of anchovy, sardine, blue whiting, Atlantic and horse mackerels, boarfish, herring and sprat in ICES sub-Areas 6, 7, 8 and 9.</p> <p>The activities of the group will also lead to the provision and analyses of a series of gridded maps of data on the hydrology, phytoplankton, small pelagic fish and megafauna of the North Eastern Atlantic pelagic ecosystem. Those spatially explicit data will be useful to any group interested in assessing the state of the North Eastern Atlantic pelagic ecosystem.</p> <p>Consequently, these activities are considered to have a very high priority.</p>
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 15–30 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and group under ACOM	<p>WGACEGG is cooperating with the following advisory structures</p> <p>a) ICES Assessment Working groups: WGHANSA, GWWIDE, HAWG together with related Benchmark WG and Workshops</p> <p>b) Advice drafting Groups: ADGHANSA</p>
Linkages to other committees or groups	There is a close working relationship with the following SCICOM groups: WGFAST, WGALES WGEAWESS and WGMEGS. Similarly, it is anticipated that close collaboration will be created with WGSPF, which will benefit from WGACEGG's expertise and data.
Linkages to other organizations	A joint session is held every two years during WGACEGG annual meeting with the survey group MEDIAS in charge of the coordination of acoustic surveys in the Mediterranean Sea.

WGMEGS - Working Group on Mackerel and Horse Mackerel Egg Surveys

2020/FT/EOSG01 A Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS), chaired by Gersom Costas, Spain and Brendan O’Hea, 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	26–30 April	Online meeting	Interim report by 14 June 2021 to ACOM/SCICOM	Brendan O’Hea and Gersom Costas confirmed as new chairs.
Year 2022	22-23 August	Copenhagen, Denmark (ICES HQ)	Interim report by 30 September 2022 to ACOM/SCICOM	second meeting of group via correspondence and remotely as WebEx conference as it falls within the year of the triennial MEGS Survey. The date for report delivery is set after the WGWIDE meeting to be able to include the preliminary results of the 2022 survey.
Year 2023	17-21 April	Madrid, Spain	Final report by 26 May 2023 to ACOM/SCICOM	

WGMEGS ToRs 2021 – 2023

TOR	DESCRIPTION	BACKGROUND	Science Plan Codes	DURATION	EXPECTED DELIVERABLES
a	Plan and coordinate the Mackerel/Horse Mackerel Egg Surveys in the ICES areas 4 to 9.	The egg surveys in the Northeast Atlantic (ICES areas 5 to 9) and in the North Sea (ICES area 4) provide important data for fishery-independent stock indices for Northeast Atlantic mackerel and for both the western and the southern horse mackerel stocks. The survey is part of a time-series that commenced in 1977. With up to 10 nations and up to 18 individual cruises participating in the survey, careful and detailed planning and coordina-	3.1	years 1 – 3	Continuously updated survey plans and survey summary sheets of the surveys in 2022/23 on the WGMEGS share-point

		tion of the surveys is essential.			
b	Plan and Coordinate the sampling and laboratory analysis for mackerel/horse mackerel fecundity and atresia.	Reliable realized fecundity estimates are needed to convert the egg abundance data to SSBs. International coordination is needed to ensure that the samples collected on different survey are representative and collections efficient.	3.1	Year 1, 2 & 3	Coordinated Sampling Plan for the surveys in 2022/23 on the WGMEGS sharepoint
c	Review and update the manuals for the Mackerel and Horse Mackerel Egg Surveys and fecundity estimation	Well defined, standardized sampling and laboratory procedures are necessary to properly interpret the monitoring data as well as ensuring that rigorous and transparent QAQC procedures have been applied and can be evaluated by external reviewers.	3.1, 3.2	Year 1, 2 and 3	Updated manuals for both, egg surveys and fecundity estimation for WGMEGS on the sharepoint in years 1 and 2, for for publication in TIMES in year 3
d	Coordinate the quality-controlled data delivery to the ICES databases for both, egg abundance and fecundity data	x	3.1	Year 3	Updated ICES egg and larval database. ICES fecundity and atresia database
e	Organise and evaluate workshops aimed at developing survey specific expertise in fish egg identification and staging, and fecundity estimation	For quality assurance in the year before the Atlantic survey two workshops will be organized in which survey participants are obliged to participate in order to standardize egg identification and staging and fecundity estimation. The WGMEGS manual is required to be updated with the results from those workshops.	3.2, 3.3	Year 1 and 2	TIMES survey manual article
f	Prepare, organise and evaluate a workshop on mackerel and horse mackerel survey design and data quality assurance and control	Since the recent surveys and due to rapidly changing environmental conditions, the assumptions, under	3.2, 3.3	Year 3	CRR

		which the current survey design was determined, are being increasingly challenged. New survey strategies and techniques, as well as new methods for spatial data analysis need to be carefully implemented in order to maintain the integrity of the time series.		
g	Provide relevant fisheries resources assessment groups with quality-controlled time series of indices on spawning stock biomass for mackerel, horse mackerel and hake in time fore the assessments.	Provisional estimates of mackerel SSB, and egg production of horse mackerel and hake are delivered in the year of the survey. The estimates however are finalized during the WGMEGS meeting in the year after the Atlantic survey.	1.3 , 3.1 , 5.1 , 5.2	Years 2 and 3

Summary of the Work Plan

YEAR 1	PLANNING OF THE EGG SURVEY IN 2022, CONDUCT 2 WORKSHOPS TO DEVELOP SURVEY SPECIFIC EXPERTISE
Year 2	Survey year, the Atlantic survey is conducted in 2022, a WebEx meeting will take place in year 2 after the survey to collate the survey results and provide preliminary results. A report, by correspondence, with the updated planning and manuals, and the preliminary results of the 2022 survey, is published.
Year 3	Reporting and finalizing of the results of the 2022 egg survey. Planning of the 2023 North Sea egg survey. Delivery of CRR on mackerel and horse mackerel survey design.

Supporting information

Priority	Essential. The egg survey provides important fishery-independent stock data used in the assessment for Northeast Atlantic mackerel and for the western horse mackerel stocks.
Resource requirements	No additional resources needed for ICES. For participants the surveys are all part of the national programs. The surveys and associated meetings are also partially funded under the EU fisheries data directive.
Participants	Usually ca. 15–20 participants from ICE, Far, N, NL, P, ESP, UK (E), UK (Scot), DE, DK, IRL.

WGSSE - Working Group on Size and Species Selection Experiments

2020/FT/EOSG02 A Working Group on Size and Species Selection Experiments (WGSSE), chaired by Haraldur Arnar Einarsson, Iceland/FAO, and Michael Pol, USA will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2020	10 December 2020	Online meeting		Follow-up breakout day in second week of January 2021
Year 2021	10 December 2021	Online meeting		
Year 2022	Postponed	Postponed	Final report by TBD to EOSG	
Year 2023	TBD	TBD	TBD	Election of new chairs(s)

ToR descriptors⁶

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	Review historic and newly developed analytical and statistical methodology to estimate size and species selection in towed and static fishing gears including consideration of environmental covariates (both instantaneous and modelled).	Estimates of selectivity are important to management through both the assessment process and the development of more selective management measures. A common understanding of the pros and cons of different methods of estimating selectivity is vital to making progress.	5.4	1 year (2020-21)	
b	Write guidelines for field data collection, including covariates which may affect size and species selection..	Knowledge of the data requirements of the different methods will result in more consistent data collections across studies even if conducted by non-experts	5.4	1 year (2020-21)	

c	Develop comprehensive guidelines for accurate estimation of size selection for a global audience	Wileman, et al. (1996) published a manual on the methodology for estimating retention, or selectivity WGFTFB members see a need to update the methodological information and augment it to include additional gears.	5.4	2 years (2020-2022)
d	Compile the guidelines on field data collections and methods for accurate estimation of fishing gear size selectivity into a technical report for ICES and FAO	WGFTFB has been seeking to produce a much-needed updated manual to estimate selectivity but struggled with time and resource issues to produce this. This WG, consisting of members of WGFTFB aims to resolve this issue.	5.4	1 year (2022-23) CRR

Summary of the Work Plan

Year 1	Meet to identify areas, develop an outline of the new manual, and create thematic subgroups
Year 2	Bring text together for group editing and approval
Year 3	Produce final draft

Supporting information

Priority	The activities of this group will provide a much-needed update to a primary reference document, ICES Cooperative Research Report No. 215: Manual for Methods of Measuring the Selectivity of Towed Fishing Gears. The Manual is now nearly 25 years old, and was developed before the availability of open-source statistical software and newer statistical methodology accessible due to computing power. ICES Report No. 215 is a foundational document for gear technologists.
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Resource requirements	No resource requirements for ICES. Additional resources to undertake these activities is minimal, and will be drawn from members' institutions
Participants	The Group is expected to consist of at least 10 members, mostly drawn from WGFTFB
Secretariat facilities	Standard support
Financial	Publication of CRR
Linkages to ACOM and group under ACOM	There are no obvious direct linkages.
Linkages to other committees or groups	Annual or more frequent updates to WGFTFB are planned
Linkages to other organizations	FAO Fishing Operations and Technology Branch (NFIO)

WGBIFS - Baltic International Fish Survey Working Group

2020/FT/EOSG03 **The Baltic International Fish Survey Working Group (WGBIFS)**, chaired by Elor Sepp, Estonia and Olavi Kaljuste, 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	22–26 March	Online meeting	Interim report by 15 May 2021 to, SCICOM and ACOM	Elor Sepp and Olavi Kaljuste appointed as chairs
Year 2022	4-6 April	Online meeting	Interim report by TBD 2022 to, SCICOM and ACOM	
Year 2022	7-11 November	Copenhagen, Denmark	Interim report by 9 December 2022 to, SCICOM and ACOM	
Year 2023	20-24 March 2023	Cadiz, Spain	Final report by 28 April 2023 to, SCICOM and ACOM	

ToR descriptors

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	Combine and analyse the results of acoustic surveys and experiments	Acoustic surveys provide important fishery-independent stock estimates for Baltic herring and sprat stocks	3.1	annually Year 1, 2 and 3	Updated acoustic tuning indices for WGBFAS
b	Update the BIAS, BASS and GRAHS hydroacoustic databases and ICES database for acoustic-trawl surveys	The aim of BIAS, BASS and GRAHS databases is to store the aggregated data that are used for the calculation of the survey indices. The aim of ICES database is to ensure that	3.1	annually Year 1, 2 and 3	Updated databases with acoustic and biotic data for WGBIFS

		the standardized and quality-controlled scrutinized data from the acoustic-trawl surveys will be stored centrally in a safe way and enables easy access to the data, which will facilitate usage for many different analyses by a wider range of users.			
c	Coordinate and plan acoustic surveys including any experiments to be conducted	Acoustic surveys provide important fishery-independent stock estimates for Baltic herring and sprat stocks	3.1	annually Year 1, 2 and 3	Finalized planning for the surveys for WGBIFS
d	Review the results of BITS surveys and evaluate the characteristics of TVL and TVS standard gears used in BITS	Demersal trawl surveys provide important fishery-independent stock estimates for Baltic cod and flatfish stocks	3.1	annually Year 1, 2 and 3	Updated BITS data in DATRAS database for ICES Data Centre and WGBFAS
e	Coordinate and plan demersal trawl surveys and experiments to be conducted, and update and correct the Tow Database	Demersal trawl surveys provide important fishery-independent stock estimates for Baltic cod and flatfish stocks	3.1	annually Year 1, 2 and 3	Finalized planning for the surveys for WGBIFS, updated and corrected Tow Database
f	Conduct the analyses related to the improvement of quality of acoustic indices and estimation of the uncertainty in the acoustic surveys coordinated by WGBIFS	Acoustic surveys provide important fishery-independent stock estimates for Baltic herring and sprat stocks	3.1, 3.2, 3.3	Year 1-3	Improved quality of acoustic indices with estimates of the uncertainty for WGBFAS
g	Update on progress in development of the StoX software and implementation of it for the calculation of WGBIFS acoustic stock estimates	StoX post-processing software produces fish abundance estimations in a transparent and reproducible way. Planned development of the StoX should allow implication of this software by WGBIFS using the data from ICES database. Comparisons will be performed to validate whether the StoX software provides us similar results as the current IBAS calculation method in order to allow WGBIFS to use it as a new standard tool for the calculation of annual acoustic survey estimates.	3.1, 3.2	Year 1-3	Improved quality, transparency and reproducibility of acoustic indices, improved pace of work on the level of national data compilation and verification
h	Coordinate the marine	Collected and registered	3.1	annually Year 1, 2 and	Coordinated marine litter sampling

	litter-sampling programme within the Baltic International Trawl Survey and registering the data in the ICES database.	information about the marine litter (mostly anthropogenic origin), occasionally appeared in the ground trawl fish control-catches, are additional source of data about present ecological status of marine seabed in investigated areas of the Baltic.		3	programme within the Baltic International Trawl Survey (BITS).
i	Agree a standard pelagic trawl gear used in the acoustic surveys	Acoustic surveys provide important fishery-independent estimates for Baltic herring and sprat stocks size and possible uncertainties, which result from, e.g. different type of fishing gears applied for fish control-catches, should be eliminated.	3.1, 3.2	Year 1-3	Agreement on the standard pelagic fishing gear which will be used in the BIAS and BASS surveys
j	Review and update the manual for International Baltic Acoustic Surveys (IBAS; former SISP 8) and address methodological question raised at the last review of the SISP	Acoustic surveys provide important fishery-independent stock estimates for Baltic herring and sprat stocks	3.1, 3.2	Year 3	Updated IBAS manual for publication in TIMES
k	Review and update the manual for Baltic International Trawl Survey (BITS; former SISP 7) and address methodological question raised at the last review of the SISP	Demersal trawl surveys provide important fishery-independent stock estimates for Baltic cod and flatfish stocks	3.1, 3.2	Year 3	Updated BITS manual for publication in TIMES
l	Conduct analyses related to the uncertainties in the Gulf of Riga Acoustic Herring Survey (GRAHS) in order to improve the quality of the GRAHS and subsequent indices.	Until now, the preparation of the survey data for stock assessment is the responsibility of the Latvian and Estonian national laboratories. The methodology and consistency of results of this survey should be evaluated by the wider international scientific expertise available.	3.1, 3.2	Year 1-3	Improved quality, transparency and reproducibility of acoustic indices, updated databases with acoustic and biotic data from GRAHS
m	Evaluate if there are methodological and/or environmental reasons for different survey catchabilities in different ICES Sub-divisions and what may	Within the INSPIRE project assessments of herring and sprat stocks were conducted by former assessment units (AUs) instead of currently used central Baltic herring	3.1, 3.2	Year 1-3	Improved quality and transparency of acoustic indices

be magnitude of these differences	(CBH) and sprat in the entire Baltic. It was discovered in these assessments that catchabilities (q) (understood as ratio between the acoustically estimated and the model assessed stock sizes in given area/AU) of acoustic surveys estimated by applied assessment models differed by AUs, and usually q's were higher in northern than in southern waters. The question is if these differences may to some extent be caused by "environmental" differences, acoustic methodologies, area coverages etc. in the surveyed areas. This information is important to have if ICES is asked to develop/evaluate a spatial management plan for sprat and herring, as has been suggested for several years in the sprat advice.
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Summary of the Work Plan

Year 1	Compilation the survey results from 2020 and the first quarter of 2021 and reporting to WGBFAS. Coordination and planning the schedule for surveys in 2021 and first half of 2022. Review the development and validation progress of the StoX software. Conduct the analyses related to the improvement of quality of acoustic indices and estimation of the uncertainty in the acoustic surveys coordinated by WGBIFS. Uploading the data from the Gulf of Riga Acoustic Herring Survey into the ICES database for acoustic and trawl surveys and screening of the data. Conduct analyses related to the evaluation of the different survey catchabilities. Coordinate the marine litter-sampling programme in the BITS surveys and registering the data in the ICES database. Cooperate with WGIPS to find, whether there can be a joint approach for designing a standard pelagic fishing gear used in the acoustic surveys.
Year 2	Compilation the survey results from 2021 and first quarter of 2022 and reporting to WGBFAS. Coordination and planning the schedule for surveys in 2022 and first half of 2023. Review the development and validation progress of the StoX software. Conduct the analyses related to the improvement of quality of acoustic indices and estimation of the uncertainty in the acoustic surveys coordinated by WGBIFS. Conduct analyses related to the uncertainties in the Gulf of Riga Acoustic Herring Survey. Conduct analyses related to the evaluation of the different survey catchabilities. Coordinate the marine litter-sampling programme in the BITS surveys and registering the data in the ICES database. Joint approach with WGIPS, if possible, to designing the standard pelagic fishing gear used in acoustic surveys.

Year 3

Compilation the survey results from 2022 and first quarter of 2023 and reporting to WGBFAS. Coordination and planning the schedule for surveys 2023 and first half of 2024. Implementation of the StoX software linked with the ICES acoustic-trawl survey database for the calculation of stock estimates for Baltic herring and sprat. Present the results of the analyses related to the improvement of quality of acoustic indices and estimation of the uncertainty in the acoustic surveys coordinated by WGBIFS. Present the quality checked, transparent and reproducible acoustic indices from the Gulf of Riga Acoustic Herring Survey. Address results of the analyses related to the evaluation of the different survey catchabilities to WGBFAS. Coordinate the marine litter-sampling programme in the BITS surveys and registering the data in the ICES database. Reviewing and updating the BITS and IBAS survey manuals, and publication inTIMES. Final decision concerning the possible implementation of the standard pelagic fishing gear for control-catches in acoustic surveys.

Supporting information

Priority	The current activities of this Group will lead ICES into issues related to the ecosystem effects of fisheries, especially with regard to the application of the Precautionary Approach. Consequently, these activities are considered to have a very high priority.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group is normally attended by about 25 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	The survey data are prime inputs to the assessments of Baltic herring, sprat, cod and flatfish stocks carried out by WGBFAS. Linked to ACOM through the quality of stock assessments and management advice.
Linkages to other committees or groups	There is a very close working relationship with WGBFAS. It is also relevant to the HAPSISG, WGFAST and the working group on Marine litter (WGML).
Linkages to other organizations	No direct linkage to other organizations.

WGELECTRA - Working Group on Electrical Trawling

2020/FT/EOSG07 A Working Group on Electrical Trawling (WGELECTRA), chaired by Mattias van Opstal, Belgium, and Edward Schram, the Netherlands, 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	9-10 November	Online Meeting	Interim report by 31 of December 2021 to ACOM-SCICOM	
Year 2022	28 September	Online Meeting	Interim report by 26 of October 2022 to ACOM-SCICOM	
Year 2023	TBD	TBD	Interim report by 31 of December 2023 to ACOM-SCICOM	

ToR descriptors⁷

ToR	Description	Background	Science Plan Codes	Duration	Expected Deliverables
a	Produce a state-of-the-art review of all relevant studies on marine electrofishing. Yearly update it by evaluating and incorporating new research to it.	a) Science Requirements b) Advisory Requirements	2.1, 6.1, 6.4	Yearly update	Review report
b	Discuss and prioritise knowledge gaps, and discuss ongoing and upcoming research projects in the light of these knowledge gaps, including the experimental set up	a) Science Requirements b) Advisory Requirements	2.1, 2.7, 6.4, 6.6	Year 1, 2 & 3	Scientific research addressing knowledge gaps or questions from management
c	Create a platform for the application for supra-national joint research projects on electrotrawling and scientific publication of the obtained results	a) Science Requirements b) Advisory Requirements	3.1, 6.6	Year 1, 2 & 3	Joint projects and publications among participants and others Collaboration with other related WG's such as WGNSSK, WGCAN

⁷ Avoid generic terms such as "Discuss" or "Consider". Aim at drafting specific and clear ToR, the delivery of which can be assessed

d	Discuss and synthetize new and emerging techniques and technologies that have potential to become alternatives for Electrical Trawling	a) Science Requirements b) Advisory Requirements	2.1, 2.7, 4.1, 4.5	Year 1, 2 & 3	Joint projects and publications among participants and others Collaboration with other related WG's such as WGFTFB
e	Discuss future for electrical trawling and the lessons learned when deploying new technologies.	a) Science Requirements b) Advisory Requirements	2.7	Year 1, 2 & 3	Joint projects and publications among participants and others Collaboration with other related WG's such as WGFTFB

Summary of the Work Plan

Year 1	- Discussing & evaluating ongoing& recently completed research - Evaluating and presenting results from research projects - Answering possible requests
Year 2	- Updating the review document - Discussing & evaluating ongoing& recently completed research - Evaluating and presenting results from joint research projects - Answering possible requests
Year 3	- Finalise the review document - Discussing & evaluating ongoing& recently completed research - Evaluating and presenting results from joint research projects - Answering possible requests

Supporting information

Priority	The current activities of this Group will lead ICES into issues related to the ecosystem effects of fisheries, especially with regard to the application of the Precautionary Approach. Consequently, these activities are considered to have a very high priority.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group 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.
Linkages to other organizations	

EGs dissolved in 2022

2021/WK/EOSG03	WKUSER2- Workshop on unavoidable survey effort reduction	Stan Kotwicki, US, Hans Gerritsen, Ireland and Kotaro Ono, Norway
2021/WK/EOSG 04	WKPilot NS-FIRMOG - Workshop on Pilot North Sea Fisheries Independent Regional Observation	Ingeborg de Boois, The Netherlands
