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Ecosystem Processes and Dynamics Steering Group (EPDSG)

2020/SG/ACOMSCICOM01 The **Ecosystem Processes and Dynamics Steering Group (EPDSG)**, chaired by Steven Degraer*, Belgium, will work by correspondence, Skype/WebEx and face-to-face meetings to:

General ToR

- a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;
- b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);
- c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;
- d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;
- e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;
- f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;
- h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;
- i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;
- k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and addressed adequately and within the advisory request timeframe;
- l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed;
- m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;
- n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Specific ToR

- o) Establish a core group of EPDSG Expert Group chairs who, together with the EPDSG Chair, will share responsibility for implementing the work of EPDSG;
- p) Generate a position paper on the contribution of EPD to ICES science, data and advice;

Timetable

EPDSG will report by March 2021 (March meeting) and October 2021 (Annual Progress Report) for the attention of SCICOM.

Supporting Information

Priority	High, the SG has a mandate from SCICOM to steer Expert Group science to help meet ICES objectives
Practical and Scientific Justification	<p>General ToR</p> <p>ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.</p> <p>ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.</p> <p>ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.</p> <p>ToR h and i reflect the need to develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.</p> <p>ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.</p> <p>ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.</p> <p>ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.</p> <hr/> <p>Specific ToR</p> <p>ToR o recognises the reality that some EG chairs are able to offer greater engagement with ICES work. The core group will remain in regular contact, e.g. by e-mail and quarterly WebEx meetings and function to:</p> <ol style="list-style-type: none">(i) monitor and progress EPDSG ToRs(ii) brainstorm ideas for how to enhance ICES work in areas relevant to EPD;(iii) plan the future of EPDSG including identifying possible chairpersons <p>ToR p aims to deliver information captured by the other ToRs in a user-friendly format, providing summary of the contribution of EPDSG and its groups to ICES science, data and advice.</p> <p>The work planned corresponds to actions meeting the mandate assigned to the SG and aims to help ICES fulfil the relevant objectives (1–4 below) in relation to the associated science priority areas:</p> <ol style="list-style-type: none">1. Describe and quantify the state of North Atlantic Ocean regional systems (Assess the physical, chemical and biological state of regional seas, and investigate the predominant climatic, hydrological and biological features and processes that modulate regional ecosystems; Quantify the nature and degree of connectivity and separation between regional ecosystems.2. Understand and project the impacts of climate variability and change on marine ecosystems and their resources (Quantify the differential effects of climate change on regional ecosystems, develop species and habitat vulnerability assessments and promote management adaptation measures, for key species and resource-dependent communities; Understand the transfer of climate impacts across a range of spatial and temporal scales, from local to

global, from seasonal to multidecadal, identify indicators of climate-modulated biotic responses and project trajectories of change.)

3. Resolve and quantify ecological processes in marine ecosystems, including modelling the dynamics of foodwebs and their response to environmental change (Quantify the role of structural and functional diversity in marine ecosystems in providing stability and resilience of ecosystems; Investigate linear and non-linear ecological responses to change, their impacts on ecosystem structure and function, and their role in causing recruitment and stock variability, depletion and recovery; Develop end-to-end modelling capability to fully integrate natural and anthropogenic forcing and ecosystem function.)

4. Quantify the relationship between ecological processes and the provision of ecosystem goods and services (Define and quantify North Atlantic ecosystem goods and services, model their dependence on ecosystem processes and habitat condition, and estimate their social, economic and cultural value; Identify indicators of state for use in the assessment and management of ecosystem goods and services).

Although the primary focus of EPDSG is necessarily those EGs falling under its "jurisdiction" there is also a need to facilitate interactions across SG boundaries and with ACOM and its groups, especially where TORs overlap with the EPDSG frame of reference but also recognising the fundamental role of knowledge of EPD (the science) in underpinning integrated ecosystem assessment and integrated ecosystem advice

Resource Requirements	Meeting room at ASC; use of WebEx
Participants	SCICOM members, Chairs of EGs under EPDSG remit and participants to the ASC.
Secretariat Facilities	Support Secretary
Financial	None specific
Linkages to Advisory Committees	ACOM
Linkages to other Committees or Groups	All other SGs and associated EGs; potentially also to EGs falling under ACOM
Linkages to other Organisations	None specific

Human Activities, Pressures and Impacts Steering Group (HAPISG)

2020/SG/ACOMSCICOM02 The **Human Activities, Pressures and Impacts Steering Group (HAPISG)** chaired by Sarah Bailey, Canada, will work by correspondence, Skype/WebEx and face-to-face meetings to:

General ToR

- a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;
- b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);
- c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;
- d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;
- e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;
- f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;
- h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;
- i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work,
- k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and addressed adequately and within the advisory request timeframe;
- l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed ;
- m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;
- n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Timetable

HAPISG will report by March 2021 (March meeting) and October 2021 (Annual Progress Report) for the attention of SCICOM.

Supporting Information

Priority	High, the SG has a mandate from SCICOM to steer Expert Groups science to help meet ICES objectives
Practical and Scientific Justification	<p>General ToR</p> <p>ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.</p> <p>ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.</p> <p>ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.</p> <p>ToR h and i reflect the need to develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.</p> <p>ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.</p> <p>ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.</p> <p>ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.</p>
Resource Requirements	WebEx and Secretariat support
Participants	SCICOM members, Chairs of EGs under HAPISG, ASC participants
Secretariat Facilities	Support Secretary
Financial	None specific
Linkages to Advisory Committees	ACOM
Linkages to other Committees or Groups	All other SGs and Strategic Initiatives, selected EG's under ACOM
Linkages to other Organisations	None specific

Integrated Ecosystem Assessments Steering Group (IEASG)

2020/SG/ACOMSCICOM03 The **Integrated Ecosystem Assessment Steering Group (IEASG)**, chaired by Debbi Pedreschi*, Ireland, will work by correspondence, Skype/WebEx and face-to-face meetings to:

General ToR

- a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;
- b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);
- c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;
- d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;
- e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;
- f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;
- h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;
- i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;
- k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and addressed adequately and within the advisory request timeframe;
- l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed;
- m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;
- n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Specific ToR

- o) Map the EGs and their ToR against the information and data that ICES needs to deliver the Science Plan and its advisory work, suitably prioritized.
- p) Promote the development of the Regional Ecosystem Descriptions in standardized formats along the lines proposed by WKECOVER, and WKDECOVER. Propose additions and improvements to those guidelines in collaboration with constituent EG.

- q) Promote the development of outline Integrated Ecosystem Assessments with the IEA EG. It is recognized that a variety of approaches to IEA exist, and different approaches will be appropriate to the different IEA EG based on skill sets and local conditions. IEASG will promote innovative approaches including using partial component based analyses, and use of combination quantitative and expert judgement approaches.
- r) Maintain a watching brief over initiatives in IEA in the wider community beyond ICES. This should include new approaches or methods for IEA, and broadening of the IEA concept to potentially include economic and social drivers and impacts.
- s) Promote the development within EGs of standards and guidelines for good practice and Quality Assurance in the collation and use of data. This should extend to the maintenance of archived data used in the IEAs, and documentation of all the steps taken to arrive at a conclusion for a given IEA, and the possible involvement of the ICES Data centre.

Timetable

IEASG will report by March 2021 (March meeting) and October 2021 (Annual Progress Report) for the attention of SCICOM.

Supporting Information

Priority	High, the SG has a mandate from SCICOM to steer Expert Groups science to help meet ICES objectives
Practical and Scientific Justification	<p>General ToR</p> <p>ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.</p> <p>ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.</p> <p>ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.</p> <p>ToR h and i reflect the need to develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.</p> <p>ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.</p> <p>ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.</p> <p>ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.</p> <p>Specific ToR</p> <p>These are required to detail specific actions to be taken in the SG to help meet the General ToR and objectives of ICES</p>
Resource Requirements	Meeting room, WebEx
Participants	SCICOM members, Chairs of EGs under IEASG remit and participants to the ASC, ACOM.
Secretariat Facilities	Support Secretary
Financial	None specific
Linkages to Advisory Committees	ACOM

Linkages to other Committees or Groups	All other SGs
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Linkages to other Organizations	None specific
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Aquaculture Steering Group (ASG)

2020/SG/ACOMSCICOM04 The **Aquaculture Steering Group on (ASG)**, chaired by Mike Rust, US, will work by correspondence, Skype/WebEx and face-to-face meetings to:

General ToR

- a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;
- b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);
- c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;
- d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;
- e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;
- f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;
- h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;
- i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;
- k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and addressed adequately and within the advisory request timeframe;
- l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed;
- m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;
- n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Specific ToR

- o) Establish a core group of ASG Expert Group chairs who, together with the ASG Chair, will share responsibility for implementing the work of ASG;
- p) Generate a position paper on the contribution of ASG to ICES science, data and advice;

Timetable

ASG will report by March 2021 (March meeting) and October 2021 (Annual Progress Report) for the attention of SCICOM.

Supporting Information

Priority	High, the SG has a mandate from SCICOM to steer Expert Group science to help meet ICES objectives
Practical and Scientific Justification	<p>General ToR</p> <p>ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.</p> <p>ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.</p> <p>ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.</p> <p>ToR h and i reflect the need to develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.</p> <p>ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.</p> <p>ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.</p> <p>ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.</p> <hr/> <p>Specific ToR</p> <p>ToR o recognises the reality that some EG chairs are able to offer greater engagement with ICES work. The core group will remain in regular contact, e.g. by e-mail and quarterly WebEx meetings and function to:</p> <ul style="list-style-type: none"> (i) monitor and progress ASG ToRs (ii) brainstorm ideas for how to enhance ICES work in areas relevant to ASG (iii) plan the future of ASG including identifying possible chairpersons <p>ToR p aims to deliver information captured by the other ToRs in a user-friendly format, providing summary of the contribution of ASG and its groups to ICES science, data and advice.</p> <p>The work planned corresponds to actions meeting the mandate assigned to the SG and aims to help ICES fulfil the relevant objectives (1–4 below) in relation to the associated science priority areas:</p> <ol style="list-style-type: none"> 1. Describe and quantify the state of North Atlantic Ocean regional systems (Assess the physical, chemical and biological state of regional seas, and investigate the predominant climatic, hydrological and biological features and processes that modulate regional ecosystems; Quantify the nature and degree of connectivity and separation between regional ecosystems. 2. Understand and project the impacts of climate variability and change on marine ecosystems and their resources (Quantify the differential effects of climate change on regional ecosystems, develop species and habitat vulnerability assessments and promote management adaptation measures, for key species and resource-dependent communities; Understand the transfer of climate impacts across a range of spatial and temporal scales, from local to global, from seasonal to multidecadal, identify indicators of climate-modulated biotic responses and project trajectories of change.) 3. Resolve and quantify ecological processes in marine ecosystems, including modelling the dynamics of foodwebs and their response to environmental change (Quantify the role of structural and functional diversity in marine

ecosystems in providing stability and resilience of ecosystems; Investigate linear and non-linear ecological responses to change, their impacts on ecosystem structure and function, and their role in causing recruitment and stock variability, depletion and recovery; Develop end-to-end modelling capability to fully integrate natural and anthropogenic forcing and ecosystem function.)

4. Quantify the relationship between ecological processes and the provision of ecosystem goods and services (Define and quantify North Atlantic ecosystem goods and services, model their dependence on ecosystem processes and habitat condition, and estimate their social, economic and cultural value; Identify indicators of state for use in the assessment and management of ecosystem goods and services).

Although the primary focus of ASG is necessarily those EGs falling under its “jurisdiction” there is also a need to facilitate interactions across S G boundaries and with ACOM and its groups, especially where TORs overlap with the ASG frame of reference but also recognising the fundamental role of knowledge of ASG (the science) in underpinning integrated ecosystem assesment and integrated eecosystem advice

Resource Requirements	Meeting room at ASC; use of WebEx
Participants	SCICOM members, Chairs of EGs under ASG remit and participants to the ASC.
Secretariat Facilities	Support Secretary
Financial	None specific
Linkages to Advisory Committees	ACOM
Linkages to other Committees or Groups	All other SGs and associated EGs; potentially also to EGs falling under ACOM
Linkages to other Organisations	None specific

Fisheries Resources Steering Group (FRSG)

2019/SG/ACOMSCICOM05 The **Fisheries Resources Steering Group (FRSG)**, chaired by Patrick Lynch (US), will work by correspondence, Skype/WebEx and face-to-face meetings to:

General ToR

- a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;
- b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);
- c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;
- d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;
- e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;
- f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;
- h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;
- i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;
- k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and addressed adequately and within the advisory request timeframe;
- l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed;
- m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;
- n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Specific ToR

- o) Represent fisheries assessment and management science in SCICOM and ACOM and work with other SG Chairs and Chairs of EGs to ensure that ICES maintains active and impactful research on these topics.
- p) Provide feedback to ACOM and advisory services to ensure they are well informed of current and emerging science with potential to meet their needs.
- q) Provide feedback to SCICOM and research-oriented groups to ensure they are well-informed of developments in advisory request with potential to meet their needs.

- r) Contribute to the development of an ICES culture where other SGs and all EGs better understand advisory needs and have the potential to support advice.
- s) Work with ACOM leadership to review suggestions from EG for benchmark processes and contribute to the revision of ICES benchmark process.
- t) Steer the development and implementation of methods to assess the state of fisheries resources and account for the fisheries impacts in advisory/management perspective.

Timetable

FRSG will report by March 2021 (March meeting) and October 2021 (Annual Progress Report) for the attention of SCICOM and ACOM.

Supporting Information

Priority	High, the SG has a mandate from ACOM and SCICOM to steer Expert Group science to help meet ICES objectives
Practical and Scientific Justification	<p>General ToR</p> <p>ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.</p> <p>ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.</p> <p>ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.</p> <p>ToR h and i reflect the need to develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.</p> <p>ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.</p> <p>ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.</p> <p>ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.</p> <p>Specific ToR</p> <p>ToR o-t address priorities for the FRSG as defined at the ACOM ASC consultations in Sept 2018 (Doc 5a)</p>

Resource Requirements	Meeting room at ASC; use of WebEx
Participants	Chairs of EGs under FRSG remit and participants to the ASC.
Secretariat Facilities	Support Secretary
Financial	None specific
Linkages to Advisory Committees	ACOM [noting these sections will be sorted on the new resolutions database]
Linkages to other Committees or Groups	All other SGs and associated EGs
Linkages to other Organisations	None specific

Ecosystem Observation Steering Group (EOSG)

2020/SG/ACOMSCICOM06 The **Ecosystem Observation Steering Group (EOSG)**, chaired by Joël Vigneau* (France), will work by correspondence, Skype/WebEx and face-to-face meetings to:

General ToR

- a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;
- b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);
- c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;
- d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;
- e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;
- f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;
- h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;
- i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;
- k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and addressed adequately and within the advisory request timeframe;
- l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed;
- m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;
- n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Specific ToR

- o) Encourage the evaluation of existing and new data collection methods to facilitate the optimisation and improvement of monitoring programs.
- p) Support the development and uptake of new data collection technologies in EOSG specifically and the ICES community generally.
- q) Support the interaction between expert groups and the Regional Co-ordination Groups and national laboratories to support the international implementation of survey improvements

that will better meet the needs of member countries and the goals of the ICES Advisory and Science Plan.

- r) Encourage a regional perspective on data collection across multiple surveys and ecosystem components through the development of new methods and scientific studies to improve monitoring in aid of ecosystem-based management.
- s) Facilitate and foster communication with ICES' regional advisory groups by supporting regionally focused cross steering group interactions and workshops.
- t) Facilitate the planning and coordination of international monitoring programs, including survey standardisation, quality control of data provided to ICES, developing and maintaining survey manuals published in TIMES, and evaluation and mitigation of operational impacts on surveys.

Timetable

EOSG will report by March 2021 (March meeting) and October 2021 (Annual Progress Report) for the attention of SCICOM.

Supporting Information

Priority	High, the SG has a mandate from SCICOM to steer Expert Groups science to help meet ICES objectives
Practical and Scientific Justification:	<p>General ToR</p> <p>ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.</p> <p>ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.</p> <p>ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.</p> <p>ToR h and i reflect the need to develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.</p> <p>ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.</p> <p>ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.</p> <p>ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.</p> <p>Specific ToR</p> <p>These are required to detail specific actions to be taken in the SG to help meet the General ToR and objectives of ICES</p>
Resource Requirements	Meeting room, WebEx
Participants	Chairs of EGs under EOSG
Secretariat Facilities	Support Secretary
Financial	None specific
Linkages to Advisory Committees	ACOM, SCICOM
Linkages to other Committees or Groups	All other SGs

Linkages to other
Organisations

None specific

Data Science and Technology Steering Group (DSTSG)

2020/SG/ACOMSCICOM07 The **Data Science and Technology Steering Group (DSTSG)**, chaired by Jens Rasmussen*, UK, will work by correspondence, Skype/WebEx and face-to-face meetings to:

General ToR

- a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;
- b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);
- c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;
- d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;
- e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;
- f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;
- h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;
- i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;
- k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and addressed adequately and within the advisory request timeframe;
- l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed;
- m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;
- n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Specific ToR

Advancing ICES strategy

- o) Represent and provide leadership of technology and data science in ICES
- p) Ensure that ICES community is sighted on and responsive to technology and data science developments with potential to advance the tasks identified in ICES Science and Advisory Plans

Advancing data collection and methodology

- q) Expand emerging technology and data science areas in ICES (e.g., unmanned systems, artificial intelligence and 'Omics) and guide related and transformative advancements in ICES science, products and services
- r) Support continued improvements in environment and ecosystem monitoring through innovative technologies and optimization of sampling designs
- s) Foster the complementarity and interoperability of different technologies and data streams to achieve a digital ocean representation

Advancing data science and management

- t) Contribute to the development of a world-leading data collection-to-advice quality assurance framework
- u) Advise on new data management and data science methods and infrastructure, and support ICES Data Centre in strengthening data governance, quality assurance and systems design

Timetable

DSTSG will report by March 2021 (March meeting) and October 2021 (Annual Progress Report) for the attention of SCICOM.

Supporting Information

Priority	High, the SG has a mandate from SCICOM to steer Expert Groups science to help meet ICES objectives
Practical and Scientific Justification:	<p>General ToR</p> <p>ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.</p> <p>ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.</p> <p>ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.</p> <p>ToR h and i reflect the need to develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.</p> <p>ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.</p> <p>ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.</p> <p>ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.</p> <p>Specific ToR o-u</p> <p>These are required to detail specific actions to be taken in the SG to help meet the General ToR and objectives of ICES</p>
Resource Requirements	Meeting room, WebEx
Participants	Chairs of EGs under DSTSG
Secretariat Facilities	Support Secretary
Financial	None specific
Linkages to Advisory Committees	ACOM, SCICOM

Linkages to other Committees or Groups	All other SGs
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Linkages to other Organisations	None specific
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