



ICES
CIEM

International Council for
the Exploration of the Sea
Conseil International pour
l'Exploration de la Mer

Council Meeting

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Agenda item 2.1

UN Observer Status

Council is invited to take note:

- *of the involvement of ICES in various UN work, under existing agreements, and ongoing negotiations for new agreements/initiatives, and efforts made to communicate ICES work and experience*
- *of the involvement of the ICES community to ensure that relevant work of ICES is being shared, to begin with focusing on areas beyond national jurisdiction and an ICES Highlights Series on ICES work directly related to the UN Decade of Ocean Science, and where possible furthering cooperation with other IGOs establishing joint groups, and other joint activities*
- *on-going discussions with PICES, and potentially other IGOs on how we can jointly provide input to UN process, on our independent and joint activities*

Council is invited:

- *to establish links with national counterparts taking part in the work mentioned below, and share relevant ICES material*
- *to submit proposals to the Secretariat for development of thematic material (2-page information documents) that could be relevant in other UN fora, and where ICES presentations could be relevant.*

Background – ICES process

In 2014 Council considered and supported a Bureau proposal for ICES to apply for UN observer status. It was decided for the Secretariat to draft a letter for use by Member Countries to contact the appropriate agency in their home country, to assist in requesting that an item related to ICES observer status with the UN be added to the agenda of the UN General Assembly. Despite engagement from several countries, it was not possible to proceed with the ICES application.

In June 2018, after extensive preparations and very active involvement and support by Norway throughout 2018, Ambassador Tore Hattrem, Permanent Mission of Norway in NY addressed a letter to H.E. the UN Secretary General, regarding a request for the inclusion of an item in the provisional agenda of the seventy-third session; “Observer status for the International Council for the Exploration of the Sea”.

The Norwegian involvement in the UN observer status process, with participation inter alia from the IMR Director Sissel Rogne, the Director Per Sandberg, Fisheries Directorate, the Ministry of

Foreign Affairs, and the Permanent Mission in NY, included knowledge about the UN process, help with all aspect of the application, including hosting of events at the UN mission and the Norwegian representation in NY, lobbying and reactions to worries by countries, important for the application to succeed, as well as presentation of the ICES application in relevant UN fora.

An involvement that in November 2018 resulted in ICES being [granted observer status to the UN General Assembly](#)

Background – development of selected UN processes

The first UN Ocean Conference took place at UN HQ in June 2017, aiming to mobilize action for the conservation and sustainable use of the oceans, seas and marine resources. The Conference was a follow-up to the UN Agenda 2030 for sustainable development, its 17 Sustainable Development Goals (SDGs) and 169 targets. With SDG 14 “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”, specifically dealing with the oceans and acknowledging the interrelation between the SDGs, it became evident that ICES has much to contribute with its science, data and information products, and scientific advisory role. And also that it would be in the interest of the ICES Contracting Parties to ensure that such information finds its way to the UN processes.

Below is a description of the main focus of the work, following the granting of ICES observer status, with a more detailed overview of the ongoing negotiations of a new global agreement for marine biodiversity of areas beyond national jurisdiction and the UN Decade of Ocean Science, as well as a table overview of strategic considerations for other existing /initiated UN initiatives, contained in attachment 2.

Biodiversity Beyond National Jurisdiction – new global agreement being negotiated

(Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction)

Background to the negotiations:

2006-2015/UNGA Resolution 68/70; An Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (Working Group) met nine times between 2006 and 2015. Made recommendation on the scope, parameters and feasibility of an international instrument under UNCLOS.

2015-2017/UNGA Resolution 69/292; Preparatory Committee established

2017/UNGA resolution 72/249; decision to convene an Intergovernmental Conference (IGC), to consider the recommendations of the Preparatory Committee to elaborate the text of an international legally binding instrument under the United Nations Convention on the Law of Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as soon as possible.

Substance of the negotiations

Four topics, are being addressed in the IGC; agreed in a package in 2011 together and as a whole;

- marine genetic resources, including questions on the sharing of benefits,

- measures such as area-based management tools, including marine protected areas,
- environmental impact assessments (EIAs); and
- capacity-building and the transfer of marine technology.

Examples of ICES work in the four areas addressed in the BBNJ negotiations are presented in Attachment 1.

Status of negotiations

Prior to the third IGC a first draft text of an agreement was provided, with various textual alternatives.

Alternatives that reflect the different opinions of Member Countries on:

- How to achieve a good balance between a robust global standard with universal acceptance– and at the same time to recognize and respect existing legal regimes and global/regional/sub-regional organizations.
- What is the role of the new legal instrument under discussion; to “push”/“strengthen” existing organizations to deliver, to ensure coherence between existing sectoral organizations, to establish measures where organization exists **or** to work within existing organizations and recommend measures for these to consider, and thus to work towards coordination and cooperation across existing sectoral bodies.
- Should the new legal instrument establish global minimum standards or guidelines?
- The role of the new legal instrument, and a possible Scientific and Technical Body thereunder, versus the role and responsibility of State Parties in deciding whether to carry out a EIA, and whether or not EIAs should be considered and reviewed under the proposed new agreement.
- A regime for access and benefit sharing for marine genetic resources, considering needs of the marine scientific research community, and the private sector into studying marine genetic resources, and potential commercial applications.
- To what extent fish as a commodity is covered by the provisions of the draft agreement?

ICES contributions and benefits from the negotiations

A number of Intergovernmental Organizations, including ICES, are during the plenary session and side-events referring to their existing legal mandates, competences, and current practices for biodiversity in areas beyond national jurisdiction. ICES made a statement in plenary (see attachment 5), and participated in the joint IOC, ICES, DOSI, IUCN side event “Facilitating Capacity Development, Transfer of Marine Technology and Ocean Science in BBNJ” http://ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=24027. ICES has also during the UN BBNJ negotiations distributed a 2-page summary of our ABNJ work <https://www.ices.dk/news-and-events/Documents/Press%20Room/Areas%20Beyond%20National%20Jurisdiction.pdf>.

The Secretariat is, following discussions with Member Country delegations in UN, preparing:

- Further 2-page summaries of ICES work in areas of relevance to the draft agreement, as indicated in the attachment. Efforts are being made to engage with the community, to ensure that they will also see this as an important opportunity to relate their work to the BBNJ negotiations
- Further joint activities with other IGOs to highlight our on-going and new work in ABNJ, independently and jointly, both within the area of science and as regards our provision of scientific evidence to managers. This includes establishment of joint groups for issues in ABNJ
- Presentation of ICES work in ABNJ, as appropriate

UN Decade of Ocean Science

In December 2017, the UN General Assembly proclaimed the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) confirming the importance, of ocean science and observations for ocean stewardship and society. IOC was mandated to lead the planning process, and an Executive Planning Group (EPG) was established to advance the development of the Decade Implementation Plan, expected to be finalized by mid- 2020.

ICES has submitted a document to the Executive Planning Group in July 2019, mapping the ICES science plan to the six priorities of UNDOOS. See attachment 4.

The First Global Planning Meeting was held in Copenhagen on 13-15 May, 2019, and in addition, a series of regional workshops will be arranged on how to achieve by 2030 the six key Decade societal outcomes (see description in attachment 3), with workshops already taking place in the Pacific Community Workshop in Noumea, New Caledonia, the North Pacific Regional Workshop in Tokyo, Japan.

The North Atlantic regional workshop is planned for 7-10 January in Halifax, Nova Scotia, Canada, with Canada, USA, and EU as the main organizers, and with a steering committee involving also other countries (Ireland, UK) as well as ICES.

In parallel, a Science Action Plan (SAP) is being developed, as a component of the Implementation Plan for the Decade. The SAP will propose science actions outcomes and priority actions of the Decade.

ICES has been invited to provide preliminary inputs on our proposed contribution to the Decade to further inform the development of the SAP, as well as the design process of the Decade as a whole. Together with PICES we are considering to suggest joint on-going initiatives, potentially with other IGOS, to suggest how established organizations can contribute with co-delivery of solutions to identified problems, promotion of transdisciplinarity and pairing of the visions of multiple stakeholders through co-design, recognition of multiple knowledge systems, adherence to the principles of open access to data, and addressing critical ocean science capacity needs.

Examples of ICES work in the four areas addressed in the BBNJ negotiations

1. Marine genetic resources

The Working Group on Application of Genetics in Fisheries and Aquaculture (WGAGFA) provides advice on methods to describe, conserve, and manage intra-specific biodiversity, focusing on the application of genetic and genomic analyses.

A training course on Genetics in support of fisheries and aquaculture management was arranged in September 2019

2. Area-based management tools

ICES has a joint working group together with the Regional Fisheries Management organization in the North-West Atlantic - NAFO - annually collating and mapping the distribution of vulnerable deep-water ecosystems (VMEs). More than 40.000 records of VMEs are included in the publicly available ICES VME database, covering both deep water areas within and outside national jurisdiction. Locations of VMEs are essential as they are extremely vulnerable to human activities, such as bottom fishing or fossil fuel extraction. And ICES uses this to provide annual evidence to the regional fisheries management organization in the North-East Atlantic – NEAFC - on VMEs that require protection from fishing activities.

Likewise, ICES has provided scientific advice on biodiversity conservation to the Regional Seas Commission in the North East Atlantic – OSPAR –, including habitat sensitivity, proposals for threatened or declining species, and bycatch issues within fisheries. ICES is preparing joint advice to NEAFC and OSPAR on deep-water elasmobranchs, a deep-water species sensitive to fisheries.

Currently, ICES is making available all its data and information products of relevance to the upcoming regional workshop on Ecologically or Biologically Significant Marine Areas (EBSAs) in the North-East Atlantic Ocean.

3. Environmental impact assessment

ICES has no direct work on Environmental Impact Assessments, but work on many things that would contribute to it.

This includes;

- Modelling to predict where VMEs might occur – enabling management bodies to take further precautionary measures and to target research and survey to areas of greatest uncertainty
- Development of methods to better characterize and map the sensitivity and role of seabed and pelagic habitats
- Exploring impacts of pressures on the marine environment, including cumulative pressures and their cumulative impacts

- Development of indicators to describe and monitor an ecosystem in good environmental health
- Narrative of ecosystems, main human pressures conducted, and how these affect key ecosystem components, covering both ecosystems within and beyond national jurisdiction

ICES has provided the evidence base for managers for deep-sea bottom fisheries footprint, for depths of 200 m and greater, based on vessel management system (VMS) and logbook data. ICES likewise provided for potential options for a prioritization scheme for which areas to close for habitat protection.

4. Capacity building and transfer of marine technology

ICES is constantly looking into new and emerging techniques that has the potential to progress the sustainable use of our seas and oceans.

Examples of this are:

- the development of practical survey methods for measuring and monitoring in the mesopelagic zone – known as the twilight zone; beginning where only 1% of the light reaches and ending where there is no light at all – based on development and application of acoustic technologies
- the review of machine learning methods in marine science, and their deployment in advisory and scientific processes.
- ICES training courses on various scientific issues, our Annual Scientific Conference, and the mentoring in ICES expert groups
- And last, but not least the ICES databases, accessible on the ICES web-site

Attachment 2

UN Process	Background	Suggestion for possible ICES activities	Actions/considerations
<p>Biodiversity Beyond National Jurisdiction (BBNJ)</p>	<p>Two-thirds of the world's oceans lie beyond national jurisdiction. These areas beyond national jurisdiction (ABNJ) are of key importance for food security, carbon capture, and scientific research. The UN General Assembly has decided to convene an Intergovernmental Conference, under the auspices of the United Nations, to consider the recommendations of the Preparatory Committee established by resolution 69/292 of 19 June 2015. The conference will consider the required elements and elaborate the text of an international legally binding instrument under the United Nations Convention on the Law of Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as soon as possible.</p> <p>The Conference will meet over four sessions.</p> <p>1st session 4- 17 September 2nd session 25 March – 5 April 3rd session 19-30 August 4th session (TBC) Q1 or Q2 2020</p> <p>The negotiation process will address multiple elements of a new instrument, including in particular: 1) marine genetic resources, including questions on the sharing of benefits;</p>	<p>Potential for ICES contributions relates especially to <i>capacity building and transfer of marine technology</i> covering both training and the interaction behind science and advice, especially the function of science under this legal instrument to be negotiated.</p> <p>ICES to participate in parts of the second and/or third sessions, to make an intervention as observer, to prepare material (cf. Annex 1 for ICES advice and science in Areas beyond National Jurisdiction, as well as a more factual description of how ICES works, including our advisory work)</p> <p>Joint side-events, with IOC and PICES, and RFMOs.</p>	<p>ICES participated in the second session (March 2019), and in a side-event with inter alia IOC, and in the third session, giving a statement in plenary.</p> <p>Participation in the fourth session, during 2020 should be considered, and prepared.</p>

	2) measures such as area-based management tools, including marine protected areas; 3) environmental impact assessments; and 4) capacity building and the transfer of marine technology.		
UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea - (ICP-20) as well as contribution to the UN Secretary-General report "Oceans and the Law of the Sea"	<p>Informal Consultative Process The 20th meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea (ICP-20) will convene at UN Headquarters in New York, US. It will take place prior to the 29th Meeting of States Parties to the 1982 United Nations Convention on the Law of the Sea, which will convene from 17-19 June. The theme is "Ocean Science and the United Nations Decade of Ocean Science for sustainable Development". ICES was presented by ICES Ecosystem Processes and Dynamics Steering Group Chair Silvana Birchenough, who highlighted the role of ICES in the Atlantic Ocean, and adjacent seas, and our cooperation with other organizations to this end.</p> <p>In 2018 the 19th meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea (ICP-19) focused on anthropogenic underwater noise, and Mark Tasker participated on behalf of ICES, highlighting our role and capacity in addressing underwater noise.</p> <p>ICES has contributed to the UN Secretary-General report "Oceans and the Law of the Sea", this year with highlights of our work relevant to the themes requested by the UN:</p> <p>Advancing ocean science and identifying</p>	ICES has the possibility to send an observer, and should also try via its Member Countries to get support for participation in relevant panels/to make presentations of our work in relevant areas.	This fits nicely with the ICES Strategic Plan and Science Plan, and the upcoming Advisory Plan. Reference to the revised Mission and Vision, as well as our strategic cooperation partners, including involvement of Countries beyond the ICES Member Countries will be important. It is important to explain the special way ICES works, and the unbiased and non-political nature of our scientific advice.

	<p>and addressing gaps in knowledge and ocean science in SDG 14 of the 2030 Agenda for Sustainable Development;</p> <p>UN Decade of Ocean Science for sustainable development: initiatives, ideas, proposals, perspectives;</p> <p>The cross-cutting role of ocean science in SDG 14 and Agenda 2030;</p> <p>Emerging technologies;</p> <p>The science policy interface;</p> <p>The integration of traditional knowledge in ocean research;</p> <p>Strengthening ocean science in developing countries.</p>		
UN Decade of Ocean Science	<p>In December 2017 the UN announced the Decade of Ocean Science for Sustainable Development (2021-2030) to mobilize the scientific community, policy-makers, business and civil society around a programme of joint research and technological innovation.</p> <p>The announcement was a consolidation of efforts by UNESCO's Intergovernmental Oceanographic Commission (IOC) to boost international cooperation in ocean sciences. The aim is to enable better coordination of research programmes, observation systems, capacity development, maritime space planning and the reduction of maritime risks to improve the management of ocean and</p>	<p>ICES was well represented at the first global planning meeting for the United Nations Decade of Ocean Science (UNDOS) held in Copenhagen 13-15 May.</p> <p>A document was submitted to the UNDOS Executive Planning Group in July 2019, mapping the ICES science plan to the six priorities of UNDOS. See attachment 4.</p> <p>PICES has reached out to ICES to find out if we independently and together could identify projects that fit under the</p>	<p>ICES is part of the Steering Committee, for the North Atlantic Regional Workshop, Halifax, Nova Scotia, Canada, January 7 - 10, 2020</p>

	<p>coastal zone resources.</p> <p>An Executive Planning Group has been established https://en.unesco.org/ocean-decade/epg. The planning group seems to be very strong in oceanography and reasonably strong in some “conservation issues” (MPAs and Marine Spatial Planning). There seems to be less representation on fisheries science and aquaculture. Based on internal (ICES) calculations there are 3 representatives from 20 ICES countries (2 from the USA, 1 from SE, the former SCICOM national representative, and 1 from the Russian Federation –and as it seems - an independent DE scientist).</p> <p>The aim is to produce both a Science Action Plan, an outline of which will be ready by last quarter of 2019, and which will be an essential component of the Implementation Plan for the Decade, to be finalized mid-2020.</p> <p>A first global meeting took place 13 -15 May, 2019.</p> <p>Canada, Minister of Fisheries, Oceans and the Canadian Coast Guard has supported the initiative, announcing an additional investment of up to \$9.5 million in funding to advance activities of the Decade of Ocean Science.</p> <p>Regional workshops are planned, and a workshop for the North Atlantic, jointly arranged by Canada, USA, and EU, with involvement from other countries, will take</p>	<p>UNDOS, covering our current activities which are also important for the UNDOS, like:</p> <p>d) To demonstrate our good intentions under the Decade, we include activities that exceed what we would normally do in areas that are important for the Decade like:</p> <ul style="list-style-type: none"> a. Data management and data products b. Outreach and education c. Tech/expertise transfer to developing countries and SIDS. d. Strong Human Dimension integration. 	
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	place in Halifax, Nova Scotia, Canada, January 7 - 10, 2020. ICES is part of the Steering Committee.		
Second World Ocean Assessment	The assessment is carried out in accordance with pre-defined UN writing Guidelines. Many of ICES and PICES member countries are "Lead" or "Co-Lead" Members. There is a possibility to try to coordinate references to ICES and PICES work.	Anne Christine is currently in contact with Robin Brown, Executive secretary of PICES to find out how this could be progressed.	
Informal Consultations of States Parties to the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (ICSP)	Offers a good opportunity to present ICES and to show how ICES is working, through presentations, participations in panels. The (former) chair of ACOM Eskild Kirkegaard participated in the ICSP in 2018 in New York	Depending on the themes for discussion these meetings offer a good opportunity for ICES to inform about relevant work.	
Convention on Biological Diversity	There are a number of issues that are being worked out under the Convention of Biological Diversity, and which are of interest to ICES, such as: Ecologically or Biologically Significant Marine Areas (EBSAs), post 2020 Aichi targets, and the Sustainable Ocean Initiative Global Dialogue with Regional Seas Organizations and Regional Fisheries Bodies on Accelerating the Progress towards the Aichi Biodiversity Targets	For an upcoming workshop in the North-East Atlantic on designating EBSAs, ICES has offered, and actively helped locate information for use by the EBSA workshop, and the ACOM Vice-Chair Eugene Nixon, has taken part in the EBSA workshop. Post 2020 Aichi targets ICES has nominated Eugene Nixon to take part in the thematic	

		<p>workshop on marine and coastal biodiversity for the post-2020 global biodiversity framework (13 – 15 November 2019, Montreal, CA).</p> <p>Meetings on the Sustainable Ocean Initiative Global Dialogue with Regional Seas Organizations and Regional Fisheries Bodies on Accelerating the Progress towards the Aichi Biodiversity Targets</p> <p>ICES has been represented at the two first meetings, by Wojciech Wawrzynski, and should continue to engage, as this offers good possibilities of both representing ICES and our work as well as making liaisons with other partners.</p>	
<p><i>Other relevant fora</i></p> <p>International Authority</p> <p>Seabed</p>	<p>Workshop on the regional environmental management plan for the area of the northern mid-Atlantic ridge, 25-29 November, 2019; Evora, Portugal</p> <p>The International Seabed Authority (ISA), in collaboration with the Atlantic Regional Environmental Management Plan (REMP) Project (funded by European Union) and the Government of Portugal, will convene the First Workshop on REMP for the Area of the Northern Mid-Atlantic Ridge (MAR), at the University of Évora, Évora, Portugal, from 25-29 November 2019.</p> <p>The workshop aims (i) to review and analyze seafloor and water column ecosystem data from the northern mid-Atlantic ridge (MAR), (ii) to</p>	<p>ICES is considering nominating an expert to take part in the workshop</p>	

	<p>synthesize environmental data, faunal distribution, faunal dispersal capabilities and distances, genetic connectivity, patterns of biodiversity, community structure, ecosystem function, and ecological proxy variables along and across the northern MAR, (iii) to review current exploration activity within contract areas and distribution of resources (polymetallic sulfides) along the northern MAR, (iv) to describe potential areas that could be vulnerable to exploitation of mineral resources in the Area and would require enhanced management measures, and (v) to describe potential areas in the Area that could be reserved from exploitation in order to achieve effective protection of the marine environment, including through the designation of areas of particular environmental interests (APEIs).</p> <p>The results of this first workshop will provide scientific inputs to the second workshop on the regional environmental plan for Area of the northern MAR to be held in St. Petersburg, Russia, in June 2020, which will focus on identifying specific management measures for developing draft elements for inclusion in the REMP.</p>		
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Attachment 3

DESCRIPTION OF UN DECADE SOCIETAL OUTCOMES

(extracted from UN Decade Roadmap document)

The main principle is that the Decade will address both deep disciplinary understanding of ocean processes and solution-oriented research to generate new knowledge. This knowledge will support societal actors in reducing pressures on the ocean, preserving and restoring ocean ecosystems and safeguarding ocean-related prosperity for generations to come. The Decade should turn the scientific knowledge and understanding into effective actions supporting improved ocean management, stewardship and sustainable development.

The Roadmap identifies six societal outcomes:

1. A clean ocean whereby sources of pollution are identified, quantified and reduced and pollutants removed from the ocean

“Human activities are increasingly impacting its local and, subsequently, the global environment, leading to pollution by both chemical and physical wastes. Through the Decade, integrated research will be fostered to assess the human and environmental risks of ongoing and future types of ocean pollution, to generate new ideas to reduce the ocean pressures by promoting recycling, improved waste management and related incentives, and by strengthening the governance regimes to encourage more sustainable production and consumption. The most challenging ocean pollutants include: atmospheric carbon dioxide, which is the main cause of the climate change with ocean warming, ocean acidification, and sea-level rise; agricultural fertilizers, which lead to increased primary production but result in ocean deoxygenation; untreated waste water; invasive species; and micro- and macro-plastics.”

2. A healthy and resilient ocean whereby marine ecosystems are mapped and protected, multiple impacts, including climate change, are measured and reduced, and provision of ocean ecosystem services is maintained

“Marine ecosystem degradation has greatly accelerated during the last five decades due to the multitude of stressors affecting the ocean. To support the conservation and protection of ocean ecosystems, the Decade will promote interdisciplinary research aimed at elucidating impacts of cumulative stressors on the ocean, its seas, ecosystems and resources, hence providing more complete information to fill gaps, and specify actions, which can improve the situation and reverse the degradation. Improved appreciation of the economic and societal value of ocean ecosystems will also be key to stimulate the development of marine spatial planning, marine protected areas, and other ecosystem-based management approaches. Supplementing and completing the science base with holistic mapping of the ocean, in all its dimensions, will also be needed for adaptive management approach towards good ocean stewardship. All nations will benefit in a healthy and resilient ocean and by preserving its capacity to deliver food, income, support transportation and many other elements of sustainable development.”

3. A predicted ocean whereby society has the capacity to understand current and future ocean conditions, forecast their change and impact on human wellbeing and livelihoods

“The vast volume of the ocean and its complex coastlines are neither adequately observed nor fully understood. In particular, the deep sea is a frontier of ocean sciences. Under the Decade, sustained and systematic ocean observations can be expanded to all ocean basins and depths to document ocean change, initialize

ocean system models and provide critical information for improved ocean understanding. Such information is increasingly needed by nations and the ocean business community operating within or beyond national jurisdictions. Improved access to understanding ocean present and future conditions will be a pre-requisite to the development of sustainable ocean economic policies and ecosystem-based management and will lead to more efficient shipping, mitigate storm damage and flooding of coastal cities, sustain healthy fisheries, protect coral reefs and other key marine ecosystems from degradation, and improve climate forecasting, amongst a few. The Decade will also build on advances in ocean robotics and the combination of remote and in situ ocean observations which offer new opportunities and will reduce operational costs; it will also promote free and open data sharing and multi-stakeholder contributions by governments (rich and poor), the private sector and citizens."

4. A safe ocean whereby human communities are protected from ocean hazards and where the safety of operations at sea and on the coast is ensured

"Ocean hazards such as storm surges, tsunamis, harmful algal blooms, or coastline erosion can be devastating for coastal communities. The rush for coastal recreation and economic expansion in the maritime domain has increased access to the sea to a multitude of users, producing newly built infrastructures that are increasingly vulnerable to ocean extreme events. Climate change impacts on the ocean will have profound implications for all human societies and most of our activities. The Decade will promote research aimed at reducing and minimizing impacts of various changes (risk reduction) through adaptation and mitigation, at assessing social and physical vulnerability and help clarify interactions between natural and man-induced changes. It will also support the development of integrated multi-hazard warning systems in all basins hence contributing to enhanced preparedness and awareness of society with regards to ocean risks. This could trigger the introduction and use of new technologies through private-public partnerships. Community resilience and adaptive capacity, with elevated education and awareness as regards the use of observations and data, will also contribute to reduced impacts and improved efficiency of early warning systems for natural and man-made hazards."

5. A sustainably harvested and productive ocean ensuring the provision of food supply and alternative livelihoods

"Society now depends on the ocean more than at any time before. It is a vital source of nourishment, supporting directly the livelihood of about 500 million people, especially in the poorest nations, and, indirectly, the global population. Ocean economies are among the most rapidly growing and promising in the world, providing benefits to many sectors of great economic value, such as fisheries, biotechnologies, energy production, tourism and transport, and many others. The Decade should create a better understanding of the interactions and interdependencies of the environmental conditions and processes, the use of resources and the economy. A major task in context of the development of the ocean economy will be in documenting the potential impacts from environmental changes on the established and emerging maritime industries and their ability to generate growth, especially for LDCs (Least Developed Countries) and SIDS (Small Island Development States). Defining safe and sustainable thresholds for economic operations in the ocean will help policy-makers and stakeholders in implementing a truly sustainable blue economy. New research should develop

and flesh out sustainable blue-green growth agendas and link it to efforts in ecosystem protection.”

6. A transparent and accessible ocean whereby all nations, stakeholders and citizens have access to ocean data and information, technologies and have the capacities to inform their decisions

“The achievement of the above outcomes very much depends on global capacity building and resource-sharing between countries at different levels of wealth and development. The enormous need for more ocean information at the scientific, governmental, private sector, and public levels demands a step-change in ocean education at all levels. New technology, and the digital revolution are transforming the ocean sciences; these will be harnessed to deliver data and information to all stakeholders. Science-policy interface for oceans should be enhanced as well. Open access to ocean information, increased interactions between the academic and societal actor communities, and ocean literacy for all should capacitate all citizens and stakeholders to have a more responsible and informed behaviour towards the ocean and its resources. Innovative capacity development schemes between south–south and north–south ocean actors as well as courses for ocean professionals will be key in raising ocean awareness and promote better solutions.”

Submission from the International Council for the Exploration of the Sea to the Executive Planning Group for the United Nations Decade of Ocean Science for Sustainable Development (2021–2030)

Background

The purpose of this submission from the International Council for the Exploration of the Sea (ICES) to the Executive Planning Group is to enable the group to further formulate priorities and plans for a global ocean science agenda and to connect ocean science activities with the 2030 Sustainable Development Agenda. ICES intends that work in support of the priorities outlined in this submission will help to increase the societal value of future marine science, and that the resulting knowledge, data, assessments and advice will help policy-makers find solutions to ocean sustainability challenges. ICES proposals for priorities are linked to the Decade's six societal objectives, as identified at the 1st Global Planning Meeting. We are able to mobilise our network to contribute to these tasks as described in this submission.

As well as providing this submission, and supporting any follow-up by the Executive Planning Group, ICES will actively engage in the Regional Workshop for the North Atlantic (Halifax, January 2020), to develop and share ideas about the design of the Decade and the resulting planning and co-ordination, science delivery and pathways to impact.

About ICES

The International Council for the Exploration of the Sea (ICES) is an intergovernmental marine science organisation that develops science and advice to support the sustainable use of the seas and oceans. ICES is a network of experts from over 700 institutes and organizations in 20 member countries and beyond. Over 4000 experts participate in our activities annually, including meetings of over 150 expert groups that address diverse marine science topics. Experts committed 22000 days to core ICES activities in 2018. ICES activities span ecosystem science, the impacts of human activities, observation and exploration, emerging techniques and technologies, seafood production, conservation and management science, and sea and society. Through strategic partnerships our work on all these topics in the Atlantic Ocean, and especially the North Atlantic, extends into the Arctic, the Mediterranean, the Black Sea, and the North Pacific. ICES activities covers both areas within and beyond national jurisdiction.

ICES mission is to advance and share scientific understanding of marine ecosystems and the services they provide and to use this knowledge to generate state-of-the-art advice for meeting conservation, management, and sustainability goals. ICES successes as a marine science organization, and in meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans, have been achieved by people from diverse national and disciplinary backgrounds working together to accomplish shared goals.

ICES mission, expertise and resources align with the aspiration for the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) to

create a new foundation, across the science-policy interface, to strengthen the management of the ocean.

The scope of ICES science

The ICES science network works collectively and collaboratively to generate ecosystem and sustainability science that advances and shapes understanding of marine ecosystems and their interactions with society and climate. This understanding, and the data and evidence streams that enrich it, are used to advance ICES capacity to provide authoritative and impartial insight and advice into the state and sustainable use of our seas and oceans. ICES has seven interrelated science priorities, each with an objective and purpose, as described in the ICES Science Plan “Marine ecosystem and sustainability science for the 2020s and beyond”. ICES is sharing information on these priorities to support the Executive Planning Group in further formulating priorities and plans for a global ocean science agenda and to highlight ICES potential to contribute to the Decade.

Priority 1: Ecosystem science

To advance and shape understanding of the structure, function, and dynamics of marine ecosystems — to develop and vitalize marine science and underpin its applications

Priority 2: Impacts of human activities

To measure and project the effects of human activities on ecosystems and ecosystem services — to elucidate present and future states of natural and social systems

Priority 3: Observation and exploration

To monitor and explore the seas and oceans — to track changes in the environment and ecosystems and to identify resources for sustainable use and protection

Priority 4: Emerging techniques and technologies

To develop, evaluate, and harness new techniques and technologies — to advance knowledge of marine systems, inform management, and increase the scope and efficiency of monitoring

Priority 5: Seafood production

To generate evidence and advice for management of wild capture fisheries and aquaculture — to help sustain safe and sufficient seafood supplies

Priority 6: Conservation and management science

To develop tools, knowledge, and evidence for conservation and management — to provide more and better options to help managers set and meet objectives

Priority 7: Sea and society

To evaluate contributions of the sea to livelihoods, cultural identities, and recreation — to inform ecosystem status assessments, policy development, and management

Proposed priorities

To support the Decade's six societal objectives, ICES highlights the importance of the following topics and would seek to contribute to the Decade in these and related areas. Some of the topics which ICES would prioritise are relevant to two or more of the Decade's societal objectives.

I. A clean ocean.

Supporting integrated research to assess the human and environmental risks of ongoing and future types of ocean pollution, to support effective management of pressures on the ocean to ensure resulting impacts are sustainable.

- a) Describe the distribution and intensity of pressures that result from contaminants and pollutants, eutrophication, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture and fishing.
- b) Describe the exposure of habitats to pressures, their vulnerability and resilience, and develop and test indicators of pressure, state and function.
- c) Develop methods and models for individually and cumulatively assessing and projecting ecological impacts of diffuse pressures (e.g. pollution, litter) spanning different levels of biological organisation and at a range of time and space scales.
- d) Model the transport of litter and pollutants to link sources to areas of impact, especially when these span long distances (e.g. Arctic and deep sea) or many trophic levels (e.g. impacts on predatory fishes, birds and mammals).
- e) Assess and project implications of emerging human activities for existing management systems and marine industries and advise on options for mitigation and adaption.
- f) Track the emergence of new technologies in marine industries and assess how these technologies affect the interactions between those industries and the marine environment.
- g) Assess interactions between aquaculture and the environment including the risks posed by nutrient and organic loads.
- h) Develop an evidence base and assessment tools to support existing and potential demands for advice on conservation and management of contaminants and pollutants, eutrophication, litter, shipping, noise, oil and gas extraction, construction and renewable energy.
- i) Further develop capacity to provide ecosystem-based advice by adding quantitative analyses of more pressures and impacts to fisheries and ecosystem overviews; and by developing and integrating aquaculture overviews.

II. A healthy and resilient ocean.

Supporting science to advance and shape knowledge of the ocean system, its role in the earth and climate system, including the human component, its biodiversity and the seabed. Supporting interdisciplinary research to elucidate the impacts of cumulative stressors.

- a) Assess and report on trends in ocean climate.
- b) Improve understanding of the oceanography of semi-enclosed and shelf seas around the North Atlantic and of the wider north Atlantic ocean.
- c) Describe links between the physical and biological environment and their influence on production, biogeochemical cycles and other ecosystem functions, and consequences for the stability and resilience of ecosystems and the services they provide.
- d) Describe connectivity within and among ecosystems, of many species and life stages at a range of spatial scales, and assess the ecological consequences of disruption to connectivity networks.
- e) Develop methods to map and predict the distribution of seabed and pelagic habitats and biodiversity and their sensitivity to environmental variation and change.

- f) Develop and apply molecular, morphological and other taxonomic methods to describe and identify species.
- g) Describe species' life histories, their links to the environment and responses to environmental change, including phenotypic and genetic adaptation.
- h) Build on and challenge existing assumptions about population and community structures and interactions, by searching for new insights using molecular methods, physiology and behavioural science.
- i) Describe the distribution and intensity of pressures that result from contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture, fishing, climate change, acidification and habitat loss.
- j) Explore how pressures on the marine environment act, independently and collectively, to modify the variety, quantity and distribution of marine life and the structure, function and dynamics of food webs and marine ecosystems (including cumulative pressures and their cumulative impacts).
- k) Conduct an ambitious co-ordinated programme to further explore and report the ecological characteristics of the ICES region, with a focus on the distribution of habitats, in part to support integrated assessment.

III. A predicted ocean.

Supporting development, management and operation of ocean observing networks and associated data systems to provide information on current and future ocean conditions. Forecasting environmental change and its impact on human wellbeing and livelihoods.

- a) Assess and report on trends in ocean climate.
- b) Develop and co-ordinate, integrated, quality assured and cost-effective monitoring programmes.
- c) Evaluate and optimise survey design, connectivity of observation systems, and survey data handling, access and analysis — to meet existing demands for data and to meet emerging data, science and advisory needs; with a focus on supporting fisheries assessment, integrated ecosystem assessment and ecosystem-based management.
- d) Conduct analyses and testing of techniques, sensors and the logistical and statistical aspects of survey design to increase the efficiency, scope and accuracy of monitoring and the relevance of monitoring programmes to science and advisory needs.
- e) Horizon scan, test, develop and where appropriate harness new and emerging techniques and technologies that have potential to progress methods of data gathering, processing and interpretation.
- f) Develop more efficient ways of analysing, sharing and presenting big data from observation and monitoring; especially using data from remote sensing of the seas and monitoring of human activities.
- g) Develop and apply a wide range of analytical and statistical tools, such as machine learning, to describe the state and dynamics of the marine environment and the distribution and dynamics of human activities, and assess their strengths and weaknesses.
- h) Describe alternate futures and management options for marine socio-ecological systems and assess the vulnerability and resilience of marine industries and society to climate change.
- i) Investigate the future social and economic consequences of human responses to management actions and the role of marine spatial planning in resolving conflicts and supporting co-existence of human activities and livelihoods.

IV. A safe ocean.

Supporting provision of safe seafood and increasing understanding of extreme events and their implications for ocean ecosystems and society.

- a) Assess interactions between aquaculture and the environment including the risks posed by diseases and pathogens and their mitigation, harmful algal blooms and the effects of escapees and nutrient and organic loads.

V. A sustainable, productive ocean.

Creating a more holistic understanding of the interactions and interdependencies of environmental conditions and processes. Defining science-based metrics and advice on production and sustainability to support food security.

- a) Improve methods of single-species and multi-species stock assessment, including data-limited methods. Develop and conduct management strategy evaluations, address uncertainty, and improve the transparency, robustness, efficiency and repeatability of stock assessment.
- b) Increase understanding of stock structures, migrations, life histories, natural mortality, and climate and food web impacts on marine and diadromous species, as well as multi-species interactions and the consequences of stock recovery, to strengthen the inputs and evidence base for assessment and advice.
- c) Further understanding and operationalisation of ecosystem-based fishery management and MSY concepts and their application, especially in mixed, multispecies and emerging (e.g. mesopelagic) fisheries.
- d) Examine fisheries spatial dynamics, performance and impact of gear, links between catch and effort, mixed fishery interactions, role and impacts of recreational and small-scale fisheries and the consequences of responses to management measures.
- e) Assess aquaculture production potential and carrying capacity, development scenarios, and methods of risk and benefits assessment; for rearing or full production systems including low trophic level and seaweed aquaculture, integrated multi-trophic aquaculture and offshore production facilities.
- f) Assess interactions between aquaculture and the environment including the risks posed by diseases and pathogens and their mitigation, harmful algal blooms and the effects of escapees and nutrient and organic loads.
- g) Develop aquaculture overviews to describe the distribution, ecosystem interactions, benefits and impacts of aquaculture production.
- h) Assess the wider role of seafood production in society, including resilience of the food system, interactions between food systems in the sea and on land, the effects of the changing expectations of seafood consumers on practices in aquaculture and fishing.
- i) Develop an evidence base and assessment tools to support existing and potential demands for advice on fisheries and aquaculture conservation and management.
- j) Develop methods to support implementation, and evaluation of the suitability and effectiveness of, national and international commitments and governance relating to marine spatial planning; coastal zone management; protection of species, habitats and marine ecosystems; mitigation; restoration; and the delineation, management and monitoring of marine protected areas.
- k) Develop methods to support implementation of marine policies and commitments applying to ICES member countries, including the UN Sustainable Development Goals, the Common Fisheries Policy and the Marine Strategy Framework Directive.
- l) Provide evidence to inform policy developers as they seek to set objectives and to address and reconcile use and conservation of the sea.
- m) Develop, test and apply methods and indicators to assess the social and economic status and dependence of coastal communities on aquaculture, commercial and recreational fishing, tourism and other marine industries.
- n) Investigate the social and economic risks and opportunities provided by alternate uses of the sea.
- o) Investigate the social and economic consequences of human responses to the management of fisheries and aquaculture and the role of spatial planning in resolving conflicts and supporting co-existence of human activities and livelihoods.
- p) Assess the effects of alternate models of engagement on the success of participatory processes and the perceived salience, credibility and legitimacy of outcomes that result, as

well as the practicality and performance of resulting conservation and management options.

- q) Describe alternate futures and management options for marine socio-ecological systems and assess the vulnerability and resilience of fishing and aquaculture and society to climate change.
- r) Develop understanding of how traditional and historical knowledge can inform fisheries conservation and management and how this understanding influences the effectiveness of contemporary conservation and management.

VI. Transparent and accessible ocean.

Supporting access to scientific knowledge and accelerating transfer of marine science and technology through training and education.

- a) Develop more effective mechanisms to ensure that monitoring and surveillance data (e.g. VMS, AIS) can be reused or reprocessed to support ICES scientific and advisory needs.
- b) Identify, design and make use of opportunities for public participation in observation and exploration through citizen-science; and identify and make use of opportunities for marine industries and other stakeholders to contribute to research design, data gathering and interpretation.
- c) Develop more efficient ways of analysing, sharing and presenting big data from observation and monitoring; especially using data from remote sensing of the seas and monitoring of human activities.
- d) Provide resources and infrastructure to develop and share knowledge and expertise: in expert groups, at international conferences, and through communications and publications.
- e) Provide training and networking opportunities in marine science, with a focus on applied science to support fisheries and ecosystem based management.

Creating legitimate science and evidence

ICES engagement in the Decade will also strengthen the credibility, salience and legitimacy of Decade activities in the Atlantic Ocean. First, because of the breadth of international representation in our working groups and a longstanding culture among scientists, from many national and institutional backgrounds and with different types of expertise, of working constructively and respectfully to reach scientific consensus. Second, because we have regional expertise and analyses that are ultimately intended to have an applied impact on regional management and policy need significant and effective regional engagement, and this is something we are well placed to continue to provide in all the science and advice we develop for our region.

ICES sees the dual tools of consensual deliberation of science and independent peer review of those deliberations, as the key mechanisms to deliver credible best available science for decision making for society. The breadth of knowledge across over 150 expert groups, and the dynamism of our experts, is the foundation of ICES science for society. Our experience as a trusted knowledge provider and facilitator of evidence for policy builds on this foundation. ICES uses dialogue with recipients of advice and wider society to maintain the relevancy of our science. The management objectives determined by society are already incorporated into our ICES advice frameworks. ICES uses international guidance on the ecosystem-based fisheries management to link and where possible reconcile resource management and biodiversity conservation objectives. By adapting and improving of our processes to reflect the expectations of society, ICES knowledge for society remains legitimate. Clear decision making and appropriate quality assurance of our processes underpin our role as an independent evidence provider.

ICES already has strong regional co-operation with other organisations with domains of relevance to the Decade. These include the European Commission (EC), Helsinki Commission (HELCOM), OSPAR Commission (OSPAR), Northwest Atlantic Fisheries Organization (NAFO), North Atlantic Salmon Commission (NASCO) and North East Atlantic Fisheries Commission (NEAFC). ICES also works with partners through projects and mechanisms such as the Atlantic Ocean Research Alliance. As an evidence provider, ICES bridges the management arenas of natural resources management (e.g. fisheries advice) and conservation measures (e.g. value of seabed habitat). Annual advice flows into the delineation of vulnerable marine areas in the Atlantic, mechanisms to assess and reach marine Good Environmental Status in EU waters, population dynamics of threatened and sensitive species, assessment of underwater noise, monitoring of contaminants. ICES strives to maintain consistent approaches to scientific method and evaluation of risk across these diverse evidence sources.

Relationships with partners also extend the reach of our science into the Mediterranean, Black Sea, Arctic, North Pacific Ocean and globally (e.g. The north Pacific Marine Science Organisation (PICES), Arctic Monitoring and Assessment Programme (AMAP), International Arctic Science Committee (IASC), BONUS programme (science for a better future of the Baltic Sea region), General Fisheries Commission in the Mediterranean (GFCM), Mediterranean Science Commission (CIESM), UN Intergovernmental Oceanographic Commission (IOC), Food and Agriculture Organization (FAO)). Partnerships bring mutual benefits, by strengthening the contribution of regional expertise to larger-scale and global

processes such as the Decade and contributing to shaping and delivering marine science and advice beyond the ICES region.



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ICES statement for the UN Law of the Sea Intergovernmental Conference on conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

The International Council for the Exploration of the Sea (ICES) is a global organization that develops science and advice to support the sustainable use of the oceans. While our focus is on the Northeast Atlantic, our work has great relevance to all oceans, including areas beyond national jurisdiction (ABNJ).

In accordance with the UN Convention on the Law of the Sea, the International Council for the Exploration of the Sea (ICES) has for more than 100 years promoted international cooperation in marine scientific research in the Atlantic Ocean and adjacent seas, and since 1964 this cooperation has been supported by an international convention between 20 Contracting Parties.

ICES develops knowledge and information products used in marine scientific research to meet societal needs, on the state and sustainable use of our seas and oceans. ICES is a platform for ensuring the coordination of science, data collection, data quality, and accessibility. This science and data contributes to the evidence base required to generate state-of-the-art advice for meeting conservation, management, and sustainability goals.

The ICES network extends well beyond the 20 Contracting Parties; with experts participating in more than 150 scientific working groups that address diverse marine science topics. Participation in the groups is based on expertise and is indifferent of nationality. Many of the groups are a joint effort with other international organizations, meaning that our work covers the Atlantic Ocean, especially the North Atlantic, and extends into the Arctic, the Mediterranean, the Black Sea, and the North Pacific. And including areas within and beyond national jurisdiction. Of the 150 working groups, more than a fifth are dealing with scientific issues in Areas Beyond National Jurisdiction. Altogether the groups attract over 1500 scientists annually.

The breadth of available scientific expertise means that ICES is capable of, and already providing, scientific advice to its member countries and other intergovernmental organizations in Areas Beyond National Jurisdiction. Our scientific advice is used as evidence by decision-makers, and

generated with a four-step approach; a dialogue with those that request our advice, the knowledge synthesis based on the best available science, an independent peer-review process, and an advice formulation process. A process that is participatory, transparent, and documented and generates advice that is quality-assured, unbiased and independent.

In order to identify, conserve and sustainably use biological diversity in ABNJ, appropriate science and methods are required to develop the evidence base needed to support responsible decision-making; including contributing to impact assessments. Taking the ecosystem approach as a starting point, ICES is a unique and established leader in providing advice to competent authorities on marine policy and management issues related to the impacts of human activities on marine ecosystems and the sustainable use of living marine resources.

Biodiversity is not only critical as a resource, but also to overall functioning of the ecosystem. ICES has recently advised on methods on how to identify special/valued areas in the marine environment, which in turn are key to support marine biological diversity of areas beyond national jurisdiction. ICES advises that a data-driven, expert-informed framework for mapping ecological and biological value and the subsequent identification of special/valued areas in the marine environment should be applied. And that four general ecological dimensions can be used to describe general functional aspects of the marine ecosystem: food web, habitat, biodiversity, and productivity.

ICES regards biodiversity in the broadest sense, as the variety, quantity and distribution of life. Our expert groups focus on biodiversity that spans the tree of life, from phytoplankton and bacteria to marine mammals and birds. And biodiversity in geographies from the shallow coasts to ABNJ. This integrated understanding of biodiversity in its widest sense informs our science and advice in ABNJ. Combined with our capacity to assess human and environmental pressures on the marine environment, this understanding can provide the basis for area-based management and environmental impact assessment, for example.

ICES also recognizes that valuable areas cannot be intrinsically compared to, or substituted by, one another. An area containing a single unique feature (e.g. a threatened species) is not intrinsically more, or less, valuable than another that contains multiple similar features (e.g. high biomasses of multiple key species like copepods, cod, and capelin), or that combines structurally different features (e.g. coral reefs, nursery areas, and core primary production locations). These areas are important because they contribute significantly to one or more of the features selected on basis of the EBSA criteria.

The dynamics in biodiversity, driven by human activities and climate change means that we are dealing with a non-stable situation that needs continuous observations and assessments. ICES works with impacts and projections for future impacts on ecosystems, and has provided advice on the effects of climate change on the distribution of species and their vulnerability to increasing sea temperatures.

Building capacity and the transfer of knowledge and technology is at the heart of ICES work. Our collaboration platform offers scientists an operational and established basis for coordination of international research, comparison of methods, conventional training programmes, robust data management, and data accessibility, to more than 300 million measurements ranging from biological, hydro-chemical, oceanographic and fisheries data. The ICES data policy is committed to open data and the FAIR principles.

We are dedicated to offering our platform and knowledge to continue to develop the science needed to support a future Convention on the conservation and sustainable use of marine biological diversity – and to do this in cooperation with other international organizations.