16.2 ICES ecosystem overviews

Introduction

Ecosystem overviews are key products in ICES approach to supporting ecosystem-based management (EBM). The overviews complement other types of advice, providing supporting context and allowing users to understand the implications of sectoral decisions and impacts in an ecosystem context. They are not meant to be catalogues of all available information on an ecoregion but provide science-based statements supported by quantitative (where possible) and qualitative data (where appropriate) that are of use to ICES advice requesters, stakeholders, and regional managers. The overviews are intended to advance the delivery of integrated advice, taking account of the effects of multiple human pressures on the environment and the most influential environmental and ecosystem processes, while considering multiple objectives.

The ecosystem overviews are developed through a set of workshops and are based on information provided by ICES integrated ecosystem assessment (IEA) groups and other expert groups (EGs) that specialize in state descriptors and using automated data products and GIS layers from accepted legitimate sources. The overviews are completed by an advice drafting group (ADG) and approved by ICES Advisory Committee (ACOM).

The ecosystem overviews are included in a number of cooperative agreements that ICES has with national agencies and international organizations and commissions; they also reach a broader audience of the scientific community, including ICES network. Given this broad audience, the overviews evolve through both top-down processes (advisory requests and decisions about strategic direction) and bottom-up processes (information streams highlighting "new" science products from ICES network).

Figure 16.2.1 ICES ecoregions.

Purpose and structure

As one of ICES advice products, the purposes of the ecosystem overviews are to:

1) identify the key signals inside and outside of each ecoregion that need to be taken into account for EBM;
2) describe the:
    a) location, scale, and management and assessment boundaries of each ecoregion;
    b) main regional pressures (in space and time) on the environment and ecosystem, including living resources, and the associated human activities;
    c) state of the ecosystem components (in space and time) and summarize (trends in) the pressures, that account for changes in state; this includes outlining the implications of key global drivers such as climate change, and variability in the ecosystem;
    d) relevant social-economic aspects to the extent possible, including ecosystem services and the benefits and values society derives from the ecosystem.

All this information is based on the best available evidence; areas in which information is uncertain or data is lacking or needed are highlighted in the overviews.

The overviews are structured around seven sections:

1. **Contents list.**
2. **Key messages** – summarizes the key signals (external and internal) in the ecoregion which need to be taken into account for EBM.
3. **Ecoregion description** – shows and describes through maps and text the boundaries of each ecoregion as well as its depth contours, relevant subregions, management and assessment regions, human usage, catchment areas, and Natura 2000 areas.
4. **Management** – describes the management frameworks and legislative instruments within the ecoregion.
5. **Pressures** – identifies regional priorities in the ecoregion, listing the predominant pressures and human activities.
6. **Ecosystem state** – summarizes the main state of the ecosystem components in the ecoregion, linking the selected pressures to the state of the ecosystem.
7. **Climate change impact** – describes and, if possible, quantifies the effects of climate change on the ecoregion.

Technical guidelines

The following guidelines apply to the production of ecosystem overviews:

- Non-changing elements such as geography should not be described in detail, nor should key attributes of ecosystems that are very well known to the expected readership.
- Although ecosystems are complex, in reality simplification is a necessity. Only top pressures should be identified for further analysis. The approach taken should be made explicit in the ecosystem overview.
- All ecosystem state components are displayed in the pressure–state diagram, regardless of whether direct links between them and pressures are identified or not. If no links are identified, this will be clear as no connecting lines will be present in the diagram.
- Ecosystem overviews are specific to ICES ecoregions and written for each region as a whole; any important differences within a region should be reflected in a few brief subregion bullets.
- The text should be assertive and use specific language, without too many qualifications, stating what are facts and what are not (i.e. where information is uncertain or data is lacking).
- Visual tools should be used where possible, simplified to a degree that results are intelligible and useful.
- Information/details on the spatial scale, uncertainty/confidence, any aggregation of time-series, and time series length should be provided.

- Where data from an area is partial – e.g. if data for a region has been provided by three out of four countries – a pragmatic approach assessing whether the available data may be considered to give a reliable impression of trends/pressures, etc., across that region will be taken.
- Data and knowledge sources must be fully cited. Unpublished or unvalidated sources should not be used.
- Production should, where possible, be automated using GIS methods, open databases, and methodologies.
- In general, acronyms and initialisms should be spelled in full when first mentioned. For organizations (e.g. OSPAR) and technical abbreviations (e.g. B_{lim}), hyperlinks to websites and/or relevant documents should be added.

Update, revision, and expansion

This involves the three following categories:

- **Update**. Particular information such as fisheries figures should be updated and mistakes should be corrected annually. The updates are coordinated by both ICES Secretariat and the IEA groups. The work is achievable during regular annual EG meetings.
- **Revision**. This includes a complete review and revision of the ecosystem overview, a process recommended around every five years. To follow the methodology, the presence of a wide range of expertise is critical. This step requires substantial intersessional work and is therefore not achievable during regular annual EG meetings. The following guidelines apply for the revision process:
    - Review activity–pressure–state diagram and propose modifications as appropriate.
    - Make all changes to the currently published ecosystem overview visible (i.e. through track changes) and supply with additional references.
    - Include references in the working document.
    - Before starting the revision process, contact the Secretariat to identify any new products and or elements of layout that can/should be applied to your ecoregion.
    - The revised ecosystem overview is then subject to the established advisory process.
- **Expansion**. Any new items resulting from the pipeline process (details below) can be added. This process requires intersessional work with input from one or more EGs as well as the involvement of ACOM and the Secretariat.

Incorporation of new topics

The incorporation of new topics into the ecosystem overviews takes place through the pipeline process. The purpose of the pipeline is to secure the further development of the overviews through:

- encouraging more EGs to engage in thinking about the potential contribution of their work to the overviews;
- providing a more formalized development and testing ground for topics that may become part of the overviews;
- familiarizing scientists in ICES network with good practice and quality criteria for the inclusion of topics in the advisory evidence base;
- providing EGs with regular feedback, review, and guidance to assist them in developing topics for the overviews.

The pipeline process consists of five steps:

Step 1 – Initial scoping and defining of a new topic.

The proposed new topic should ideally meet all eight criteria (see below). The new topic should generally be proposed either by ICES community or stakeholders, and it should address a specific management objective.

Step 2 – Knowledge development and quality-assured data.

This step mostly involves EG development of the new topic, including knowledge development and synthesis and assurance of data quality and transparency. These activities may take place either in existing working group meetings or dedicated workshops.

Step 3 – Peer review.

This step involves peer review of the science output (from Step 2) by both independent external reviewers and ACOM. This step should strictly follow ICES advice guidelines. Feedback is then provided to the experts, which may include a request to clarify issues and/or revisions to the topic.

Step 4 –Drafting the advice and transfer to TAF.

This step involves the drafting of the advice by an ADG and the transfer of the topic methods, data, and outputs to the Transparent Assessment Framework (TAF). This stage should strictly follow ICES guidelines of advice. During the drafting step, the ADG may ask experts to clarify certain issues.

Step 5 – Approval of the advice and publishing.

Approval of the advice by ACOM and inclusion of the topic in the ecosystem overviews.

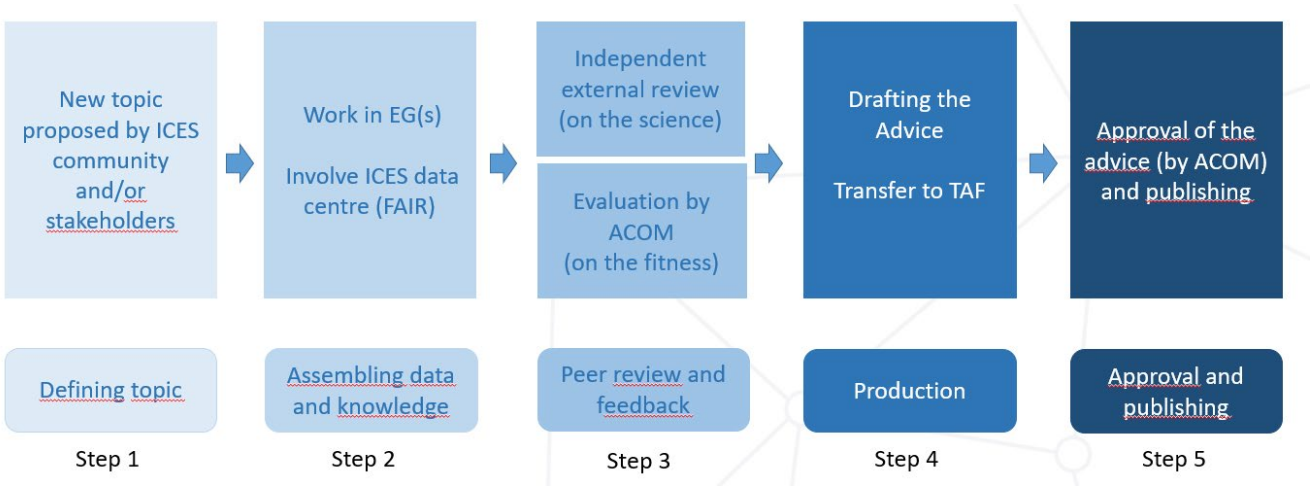

Figure 16.2.2 The five-step process for the inclusion of new topics in ecosystem overviews.

Criteria for inclusion of a new topic in ecosystem overviews

Ideally, the proposed new topic should:

- support the role of ecosystem overviews as previously outlined by WKECOVER;
- be identified as high priority by WKEO3;
- be of interest to a requesters of ICES advice and/or stakeholder(s);
- be based on mature and peer-reviewed science;
- be supported by the capacity of experts to deliver periodical updates; i.e. the availability of experts with the required skills, resources, and time for providing and analysing data and delivering text/contributions;
- be applicable for all (if not then most) ICES ecoregions;
- be based on quality-assured data which follow the FAIR (findable, accessible, interoperable, and reusable;) data principles;
- follow the Transparent Assessment Framework (TAF).

To initiate the process for the inclusion of a new topic

Please provide one-page proposal defining your topic (with a brief title) and addressing the inclusion criteria outlined above (for proposal template see Annex 4). Please send your proposal to Inigo Martinez (inigo@ices.dk). It will be reviewed by ACOM Leadership and ACOM.

Feedback

Feedback from experts

Feedback from the experts is in order to correct factual errors in the ecosystem overview and provide a review of the text with appropriate justification.

1. Identify the problem;
2. Provide suggested text (and display material, if needed);
3. Provide references (unpublished material or unvalidated sources should not be used);
4. In case of concerns about the activities–pressure–state diagram, clearly state the issue with justification.

Feedback from the ADG

This is to ensure a feedback loop from the advisory process to the experts.

1. Provide a list of the changes made in the substance of the draft text, together with justification;
2. Provide reasoning and necessity for the technical changes made;
3. Provide information on any key discussions held during the advisory process relevant for further improvement of the ecosystem overview.

Methodology to develop pressure–ecosystem state relationships (the network diagram)

At the core of the ecosystem overviews are network diagrams that illustrate the **current** main regional pressures alongside (a) the main human activities that cause these pressures and (b) the ecosystem state components most impacted by these pressures (see Figure 1 for an example of this diagram from the Celtic Seas ecosystem overview, published 10. December 2020). These network diagrams are informed by a driver–pressure-state approach using a linkage framework and pressure assessment process that examines and scores all **direct** pressures and human activities in a given ecoregion. The assessment is semi-quantitative, informed by both quantitative information where available and qualitative (e.g. expert judgement) information where little or no quantitative information is available. The number of experts and their areas of expertise should be recorded in the relevant EG reports. The steps are as follows:

Step 1 – Linkage framework

- Identify all relevant pressures and human activities present in the given ecoregion (see annexes 1 and 2).
- Produce two matrices (in xls file format) indicating: a) which human activities create which pressures, and b) which pressures affect which ecosystem state components (see annexes 1–3 and 5). This exercise can be carried out at EG meetings, with all members of the group from the ecoregion contributing to the discussion and providing examples/justification from data sources and their expert knowledge. At this point, there is no scoring of attributes only establishment of links. The templates for this work are available on the ecosystem overviews SharePoint site.

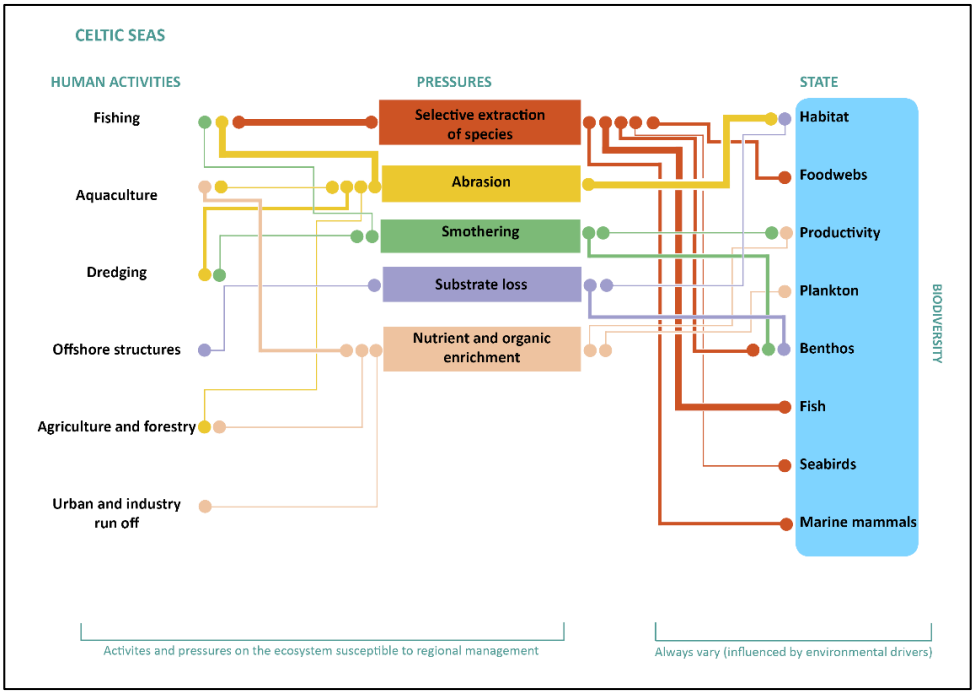

Figure 16.2.3 An example diagram from the Celtic Seas ecosystem overview (published 10. December 2020) showing the main regional pressures, the human impacts causing these pressures, and the ecosystem state components most impacted by these pressures.

Step 2 – Risk assessment

- Categorical scores are assigned for the 1) spatial extent, 2) frequency of occurrence, and 3) degree of impact of each of the identified linkage chains (human activity–pressure–ecosystem state component). Data should be used to inform scores (and documented) where available. Existing 'state of the environment' reports from national agencies can also be used to inform assessment.
- **Spatial extent** refers to the spatial overlap between a pressure and its associated ecosystem state components. The spatial distribution of the pressure may be inferred from that of the human activity but, depending on the pressure, may differ due to e.g. dispersal. Broad-scale knowledge of the human activities and their pressures taking place in an ecoregion is required. The categorical scores of spatial extent are relatively broad and are defined as follows:
    - **Exogenous** (an activity occurs outside of the area occupied by the ecosystem state component; the pressures would reach the ecosystem component through dispersal)
    - **Site** (> 0–5% overlap)
    - **Local** (5–50%)
    - **Widespread, patchy** (> 50%)
    - **Widespread, even** (> 50%)
- Scores for the **frequency of occurrence** of a pressure from a specific human activity are based on the frequency of encounter between the pressure and ecosystem component (in an average year) in the area of overlap. This is pressure-specific. Scores are assigned for frequency in the following categories:
    - **Rare** (the pressure occurs up to one month per year)
    - **Occasional** (the pressure occurs up to four months per year)
    - **Common** (the pressure occurs up to eight months per year)
    - **Persistent** (the pressure occurs in every month of the year)
- **Degree of impact** is the severity (or likely degree of impact) of any pressure when it encounters an ecosystem component. The following scores apply.
    - **Low** pressures are not considered to (currently) cause population-level/functional group effects
    - **Chronic** pressures may have a population-level/functional effect, if they have a high enough spatial and/or temporal occurrence (i.e. chronic nature)
    - **Acute** (immediate) impacts are expected/known to occur.

- Each score is assigned *independently* of the other scores. For instance, the degree of impact of a specific pressure on an ecosystem state component is not expected to change depending on the human activity causing the pressure; e.g. 'abrasion' affecting 'habitats' will have the same effect on the habitats whether it is caused by 'fishing' or by 'navigational dredging'.
- The evidence/information used to underpin each decision/scoring should be documented. At a minimum this can reflect confidence (1 = qualitative judgement, 2 = literature support, 3 = data support); however, sources should be provided where possible.
- For the example template of risk assessment, see Annex 6. The full templates are available on the ecosystem overviews SharePoint site.

STEP 3 – Analysis/diagram

- Categorical scores are converted to numerical scores according to Table 16.2.1. Impact risk scores per linkage chain are calculated as the product of the three scores assigned in Step 2 (i.e. spatial extent × frequency of occurrence × degree of impact). Each impact risk score is then calculated as a percentage of the total risk (= the sum of all chains) in the ecosystem, and those contributing more than 1% to the total risk score are identified as top risks relevant for management action.
- The 'top' risks illustrated in the ecosystem overview diagrams represent the linkage chains that contribute the most (≥ 1%) to the overall risk score, and the top five pressures in a given ecoregion are those with the highest summed impact risk scores per pressure. The percentage of risk illustrated in the network diagram (Figure 16.2.3) to be provided in the figure heading.
- Human activities and ecosystem state components are ordered in relation to their summed impact risk score (largest contributors on top, lower contributors on bottom). Linkages that exist but do not contribute to the top risks are illustrated using grey dashed lines.
- In cases where top risks (≥ 1% contribution to total impact risk score) identify fewer than five human activities or pressures, the summed impact risk scores per human activity/pressure can be used to identify the next highest ranking human activity/pressure. If this is the case, it should be noted in the title of the network diagram.
- The thickness of the connecting lines in the diagrams is determined based on the sum of the impact risk scores of the elements illustrated in the diagram divided into three size-class bins (thus thickness reflects magnitude).
- Further comprehensive analyses are available via R script, with outputs included in IEA group reports.

Table 16.2.1 Definitions for categorical scores in Step 2 and their corresponding quantiative scores for Step 3.

Spatial extent	Frequency of occurrence	Degree of impact
Spatial overlap of each human activity-pressure combination with an ecosystem state component	Temporal overlap of each human activity-pressure combination with an ecosystem state component	Severity (in terms of likely degree of impact) of any human activity-pressure interaction with an ecosystem state component
No overlap	If there is no overlap, the pressure linkage chain is not considered further in the framework	
0		
No overlap between human activity and ecosystem state component		
Exogenous		
0.01		
The activity occurs outside of the area occupied by the ecosystem state component, but one or more of its pressures would reach the ecosystem state component through dispersal		
Site	Rare	Low
0.03	0.08	0.05
Human activity overlaps with an ecosystem state component, but by less than 5%	A pressure is introduced up to one month of the year	Never causes high levels of mortality or habitat loss/never causes a noticeable effect on the ecosystem state component of interest in the area of interaction

Local	Occasional	Chronic
0.33	0.33	0.2
Human activity overlaps with an ecosystem state component by more than 5% but less than 50%	A pressure is introduced up to four months of the year	An impact that could have detrimental consequences if it occurs often enough or at high enough levels
Widespread patchy	Common	
0.67	0.67	
Human activity overlaps with an ecosystem state component by 50% or more with a patchy distribution	A pressure is introduced up to eight months of the year	
Widespread even	Persistent	Acute
1	1	1
Human activity overlaps with an ecosystem state component by 50% or more with an even distribution	A pressure is introduced throughout the year	A severe impact over a short duration. An interaction that kills a large proportion of individuals and causes an immediate change in the ecosystem state component

Climate change impact

Climate change is incorporated in the ecosystem overviews as a distinct pressure/driver which is not manageable at the ecoregional scale (and as such not included in the top five pressures). Climate change affects the environmental context and may operate across all human activities and ecosystem state components. A separate climate change section follows the pressure section and should include and distinguish:

- Evidence of the **ongoing effects** of climate change on relevant environmental variables, ecosystem state components and/or human activities, based on **past and present observations** (e.g. time-series of sea surface temperature, atmospheric forcing, or upwelling strength and temporal variations in plankton species composition, fish spatial distribution, or marine traffic distribution, in response to one or more environmental drivers).
- Evidence of the **anticipated effects** of climate change on relevant environmental variables, ecosystem state components, or human activities, based on **future projections** (e.g. forecasted anomalies in sea surface temperature, projected species distribution in response to future thermal regimes, projected spatial distribution of fishing effort with shifting productivity).
- A description of the **possible effects** on **strengths of relationships** between the top five pressures and human activity and/or ecosystem state components (e.g. ice cover reduction opening new routes for maritime transport that can increase the introduction of contaminating compounds and negatively impact the state of marine mammals).
- A brief paragraph listing the **key knowledge gaps** for assessing climate change impacts on the ecoregion.

For ongoing (observed) effects, evidence of climate change should consist of directional trends and/or persistent changes in the mean or variance. For ecosystem state components and human activities, trends should be expressed over time and in association with one or more environmental drivers.

For anticipated effects and model-based projections, downscaled (or regional) models should be used whenever possible. If regional models are not available, global ensemble models may be used, but the uncertainty layer associated with the projection should be presented.

Where climate change has been shown to affect an ecosystem state component, a succinct sentence or two describing these effects will be appropriate.

Recommended citation: ICES. 2021. ICES ecosystem overviews. *In* Report of the ICES Advisory Committee, 2021. ICES Advice 2021, Section 16.2. https://doi.org/10.17895/ices.advice.7916

Annex 1

Table A1 Glossary of main human activities in ICES ecoregions

Human activity	Explanation and examples
Aggregate extraction	Inorganic mine and particulate waste, maerl, rock/minerals (coastal quarrying), sand/gravel (aggregates)
Agriculture run-off	Agricultural wastes, coastal farming, coastal forestry, land/waterfront run-off
Aquaculture	Fin-fish, shellfish, macroalgae
Coastal development	Artificial reefs, barrage, beach replenishment, communication infrastructure on the shoreline, construction phase, culverting lagoons, dock/port facilities, groynes, land claim, marinas, oil and gas infrastructure found on the coast rather in the marine environment (e.g. shore pipelines), urban dwellings (i.e. housing and other buildings)
Desalinization	Removal of salt and other minerals from the seawater
Fishing	Benthic trawls and dredging, netting (e.g. fixed nets), pelagic trawls, potting/creeling, suction (hydraulic dredging)
Harvesting/collecting	Bait digging, seaweed and saltmarsh vegetation harvesting, bird egg collecting, shellfish hand collecting, peels, curios
Land-based industry	Industrial effluent discharge, industrial/urban emissions (air), particulate waste
Military	Military (ships, munitions)
Navigation dredging	Capital dredging, maintenance dredging, removal of substrate, spoil dumping
Nuclear power	Nuclear power stations, water abstraction and thermal discharge
Oil, gas, and hydro	Oil and gas power stations, thermal discharge (cooling water), water resources (abstraction)
Renewable energy	Renewable (tide/wave/wind) power stations
Research	Animal sanctuaries, marine archaeology, activities undertaken as part of marine research (e.g. survey cruises, grab sampling, trawls)
Shipping	Litter and debris, mooring/beaching/launching, shipping, shipping wastes
Telecommunications	Communication cables
Tourism and recreation	Angling, boating/yachting, diving/dive site, litter and debris, public beach, tourist resort, water sports
Waste water treatment	Sewage discharge, thermal discharge

Annex 2

Table A2 Glossary of main human pressures in ICES ecoregions

Pressure	Explanation and examples
Abrasion	Abrasion pressures relate to disturbance of the substrate at or below the surface of the seabed; aggregate and other mineral extraction is not covered by this pressure. Abrasion pressure is associated with bottom-contacting mobile and set fishing activities, in particular otter trawling, dredging for shellfish, and navigation and beam trawling. Other activities with a limited spatial footprint also cause abrasion.
Introduction of contaminating compounds	Examples of this pressure include discharges from ships, hydrocarbon exploration and production, atmospheric deposition, and riverine inputs. Compounds of concern include: • For marine sediments the main transition elements and compounds of concern include arsenic, cadmium, chromium, copper, mercury, nickel, lead, and zinc. • Organometallic compounds such as tributyltin (TBT) and its derivatives can be highly persistent and even low levels of exposure can cause chronic toxicity. • Hydrocarbons, including polyaromatic hydrocarbons (PAH). • Priority substances listed in Annex II of Directive 2008/105/EC[1]. • Synthetic compounds, including pesticides, antifoulants, and pharmaceuticals.
Introduction of non-indigenous species (NIS)	The direct or indirect introduction of NIS, e.g. Chinese mitten crab *Eriochier sinensis*, slipper limpet *Crepidula fornicata*, and Pacific oyster *Crassostrea gigas* and their subsequent spreading and out-competing of native species. Ballast water and hull fouling can facilitate the spread of NIS. This pressure is also associated with aquaculture, translocation of organisms, and accidental releases.
Marine litter	Marine litter is any persistent, manufactured, or processed solid material that is discarded, disposed of, or abandoned in the marine and coastal environment. Marine litter consists of items that have been made or used by people and deliberately discarded or unintentionally lost into the sea and on beaches, including such materials transported into the marine environment from land by rivers, draining, or sewage systems, or by winds. For example, marine litter consists of: plastics, wood, metals, glass, rubber, clothing, paper, etc. Land-based sources of marine litter include tourism, sewage, and illegal or poorly managed landfills. Sea-based sources include shipping and fishing.
Noise	Ocean noise refers to sounds made by human activities that can temporarily or permanently interfere with or impair the ability of marine animals to hear natural sounds in the ocean. Noise may also cause physiological or behavioural effects. Human activities that cause ocean noise include marine traffic (shipping), recreational boating, fishing vessels, energy exploration, military sonar, and inshore and offshore infrastructures (construction and operations).
Nutrient and organic enrichment	Increased levels of nitrogen, phosphorus, silicon (and iron) in the marine environment compared to background concentrations. Human sources include waste water, terrestrial/agricultural run-off, sewage discharges, aquaculture, and atmospheric deposition. Nutrient enrichment may lead to eutrophication (see also organic enrichment).
Selective extraction of species	The commercial exploitation of fish and shellfish stocks, including smaller-scale harvesting, recreational fishing, and scientific sampling. Ecological consequences can be seen in, for example, the sustainability of stocks, energy flows through foodwebs, and the size and age composition within fish stocks. This pressure includes bycatch associated with fishing activities.
Selective extraction of non-living resources from the seabed and subsoil	This pressure relates to marine aggregate extraction and mining. Some removal of benthic organisms and alteration of seabed topography may also occur.
Smothering	Smothering pressures relate to siltation or sedimentation on the surface of the seabed. Activities associated with this pressure type include marine and coastal construction, aquaculture, land claim/reclamation, navigation dredging, disposal at sea, marine mineral extraction, fishing, cable and pipeline laying, and various construction activities.

[1] DIRECTIVE 2008/105/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council. Official Journal of the European Union, L 348: 84–97.

Pressure	Explanation and examples
Substrate loss	This pressure type includes both: • the permanent loss of coastal habitats (associated with activities such as land claim, new coastal defences); and • the permanent change of one marine habitat type to another through a change in substratum, including artificial substrates (e.g. concrete). Associated activities include the installation of infrastructures such as hydrocarbon production facilities, wind farm foundations, marinas, pipelines, cables, and scour protection.

Annex 3

Table A3 Glossary of core ecosystem state components. A more detailed sublevel approach is employed for some ecoregions, with the results and details presented in their EG reports. A common hierarchical framework has been developed to facilitate cross-comparison and is available on the ecosystem overviews SharePoint site.

Ecosystem component	Explanation and examples
Fish	Limbless cold-blooded vertebrate animals with gills and fins living wholly in water. This includes both bony fish and elasmobranchs.
Cephalopods	Any member of the class Cephalopoda, such as a squid, octopus, cuttlefish, or nautilus; characterized by bilateral body symmetry, a prominent head, and a set of arms or tentacle.
Reptiles	Cold-blooded, air-breathing vertebrates which have epidermal scales covering part or all of their body. Includes marine turtles.
Seabirds	Birds that are adapted to life within the marine environment, spending most of their time at sea and sourcing all or most of their food from the marine environment.
Marine mammals	A mammal that lives in marine, or in some cases, an aquatic environment and obtains all or most of its food there.
Benthic habitat (and associated biota)	The ecological or environmental area of the seabed, inhabited by one or more living species. This ecosystem component also includes all benthos - those flora and fauna found on the bottom or in the bottom sediments of the sea not listed separately above.
Pelagic habitat (and associated biota)	The ecological or environmental area of the water column, inhabited by one or more living species. The ecosystem component also includes plankton – small organisms that float or drift in great numbers in bodies of salt or freshwater. This includes zooplankton (including jellyfish) and phytoplankton but does not include the taxonomic groups listed separately above.
Ice habitat (and associated biota)	Habitat associated with ice. The ecosystem component also includes closely associated biota, both invertebrates and vertebrates other than those listed separately above.

Annex 4

A template of the proposal for a new topic to be included in ecosystem overviews is given below.

Title of the proposed topic:

Proposed by: Name(s)

Expert group(s) involved:

Brief explanation about the topic, proposed scope/content, expected length/word count and any display material (max one page):

Delivery plan (which ecoregions and when [year]):

The proposed new topic should meet the following inclusion criteria:

Criterion	Response
Support the role of ecosystem overviews as previously outlined by WKECOVER	
Be identified as high-priority topic by WKEO3	
Be of interest of ICES requesters of advice and/or stakeholders	
Be based on mature and peer-reviewed science	
Be supported by the capacity of experts to periodically update the topic	
Be based on quality-assured data, follow FAIR principles	
Follow Transparent Assessment Framework (TAF)	
Be applicable for most (if not all) ICES ecoregions	

In case of inclusion of the proposed topic, is there a need to update the Technical Guidelines? If yes, please specify which section(s).

Annex 5

Table A5 Example of a table for identifying which human activities create which pressures. Templates for identifying which human activities create which pressures and which pressures affect which ecosystem state components are available on the ecosystem overviews SharePoint site.

Human activity/pressure	Abrasion	Introduction of contaminating compounds	Introduction of non-indigenous species (NIS)	Marine litter	…
Aggregate extraction					
Agriculture run-off		X	X		
Aquaculture					
Coastal development				X	
Desalinization					
…					
...					

Annex 6

Table A6 Example of a table for risk assessment Templates for risk assessment (including scoring conversion) are available on the ecosystem overviews SharePoint site.

Sector	Pressure	Ecosystem state component	Spatial extent	Confidence	Source
Fishing	Selective extraction of species	Fish	Local	1	Expert name
Fishing	Selective extraction of species	Cephalopods	Widespread, patchy	2	Reference to a publication
Fishing	Selective extraction of species	Reptiles	Widespread, even	3	Reference to a dataset
Fishing	Abrasion	…			
Fishing	Introduction of contaminating compounds	…			
Land-based industry	Introduction of contaminating compounds				
…	…				