

ICES biodiversity science, data and advice

MIACO 2026 Item 10 (and paper: Doc_10)
Presented by Simon Jennings
ICES Advisory Committee, vice-chair



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International Council for
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ICES biodiversity science, data and advice



To update MIACO:

- On ICES science, data and advice of relevance to biodiversity and its conservation and restoration.
- On ICES initiatives to increase the scope, scale and impact of its biodiversity science and advice, to meet current and emerging evidence and policy needs.

MIACO are invited:

- To give feedback on ICES plans for advancing biodiversity science and advice, especially the extent to which these plans address their existing and expected interests, questions and concerns.

Biodiversity

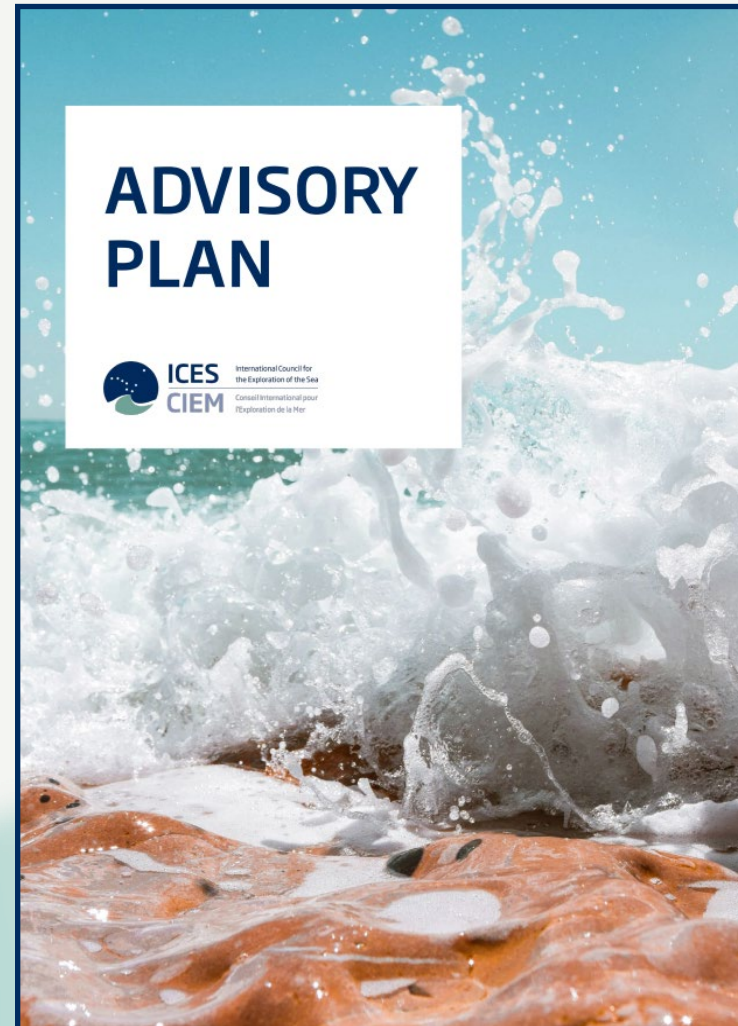
Policies to conserve biodiversity increasingly address recovery and restoration alongside the conservation of existing biodiversity.

This increases demands for science, evidence and advice beyond the "what?", "where?", "how impacted?" and "how protected?"

For example:

- Measurement and prediction of recovery rates
- Design of monitoring to detect and report on recovery
- The influence of connectivity on recovery
- Defining reference conditions
- Performance of active and passive restoration measures
- Effects of climate and cumulative pressures on recovery

Biodiversity science and advice



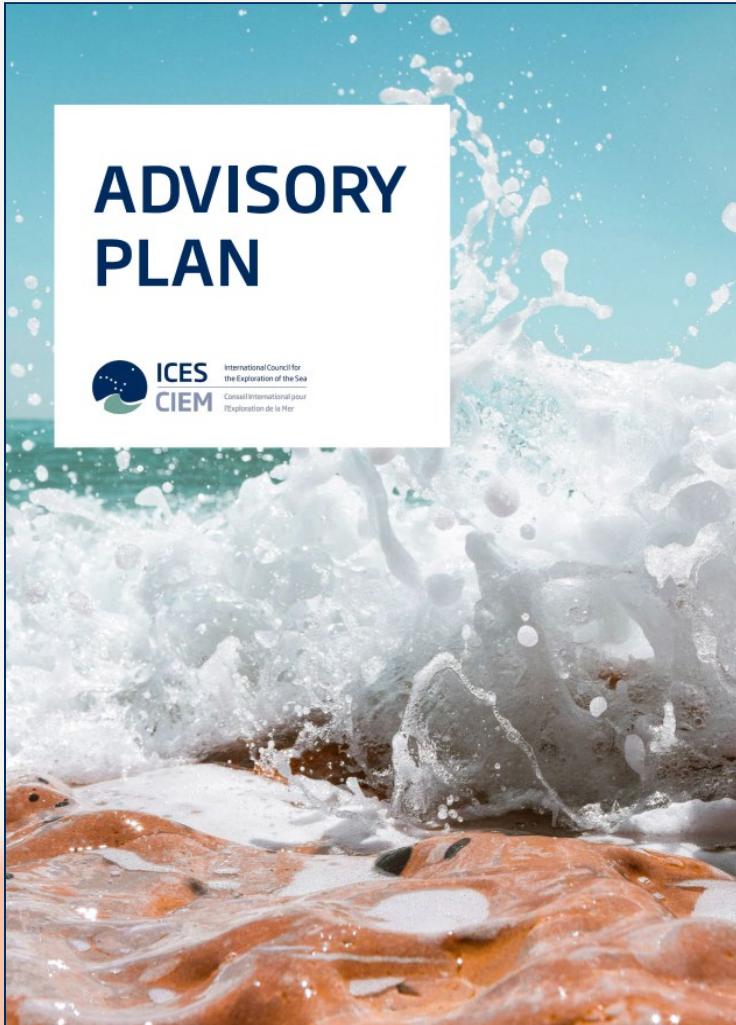
Biodiversity science



Theme on: Conservation and restoration science

- Methods to evaluate the suitability and effectiveness of management measures for biodiversity conservation and restoration.
- Assess the effect of spatial conservation measures, including marine protected areas (MPAs) and OECMs.
- Develop methods to analyse the impacts and benefits of biodiversity conservation and restoration activities, including social, cultural, and economic aspects.
- Assess conservation and restoration measures in the context of changing environments, particularly from climate change.
- Assess protection, including measures and their effectiveness for endangered, threatened, and protected species.

Biodiversity advice



- Continue to provide and develop spatially explicit advice to inform species management, habitat conservation, and restoration plans.

Biodiversity: existing advice

ICES Ecosystem Overview
Icelandic Waters Ecoregion
Published 15 December 2022

Icelandic Waters ecoregion – Ecosystem overview

11.1

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Ecoregion description

The Icelandic Waters ecoregion covers the shelf and surrounding waters inside the Icelandic EEZ. The region is located at the junction of the Mid-Atlantic Ridge and the Greenland-Scotland Ridge just south of the Arctic Circle. The ocean and coastal shelves are heavily influenced by oceanic inputs.

In the Icelandic Waters ecoregion, water masses of different origin mix. Relatively warm and saline Atlantic water enters the area, both in the southwest as a branch of the Irminger Current and in the east from the Norwegian Sea and over the Jan Mayen Ridge (Figure 1). The East Greenland Current carries cold, low salinity water from the Greenland Sea in the north into the Icelandic Waters ecoregion.

The ecoregion is considered to be made up of four key subareas (Figure 1) defined by difference in bathymetry, hydrography, and species composition:

1. Southern shelf: Coastal areas south and west of Iceland (mostly < 500 metres). Mainly a mixture of coastal, Atlantic, and Arctic waters.
2. Northern shelf: Banks north and east of Iceland (mostly < 500 metres). Mainly Atlantic water.
3. Arctic waters.
4. Southern Deep: Off the shelf south and west of Iceland (mostly > 500 metres). Mainly Arctic water.

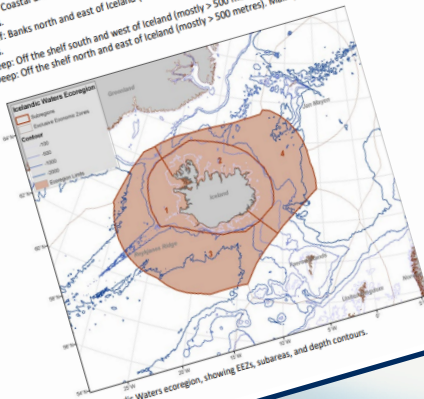


Figure 1

The Icelandic Waters ecoregion, showing EEZ, subareas, and depth contours.

ICES Advice
Ecoregions in the Northeast Atlantic and adjacent seas
Published 04 December 2025

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North Atlantic Division

Bycatch of endangered, threatened and protected (ETP) species of marine mammals, seabirds, marine turtles and selected fish species of bycatch relevance

Advice summary

Annual bycatch estimates for 2024 are provided for 39 endangered, threatened, and protected (ETP) species in 109 combinations of species, ecoregion, and métier (level 4) in 11 ecoregions. Multiannual bycatch rates (2017–2024) are provided for an additional 198 combinations of ETP species, ecoregion, and métier for which reliable bycatch estimation in 2024 was not achievable based on the available data. Subregional and métier level 5 estimates are provided for the common dolphin (*Delphinus delphis*) and harbour porpoise (*Phocoena phocoena*) in the Bay of Biscay and the Iberian Coast Ecoregion and for harbour porpoise in the Baltic Sea Ecoregion. In general, while bycatch monitoring effort in 2024 was similar to 2023, higher bycatch estimates of seabirds and marine mammals were reported in several ecoregions in 2024.

For priority marine mammals in 2024, ICES notes that the highest bycatch estimate was of common dolphin in the Bay of Biscay and the Iberian Coast Ecoregion, namely in midwater pair trawls (PTM) and set gillnets (GNS) in Division 27.8.a. The bycatch estimate of dolphin at the ecoregion scale was highest in métiers (level 5) targeting demersal fish. For harbour porpoise in 2024, the highest bycatch estimate was in set gillnets (GNS) in the Icelandic Waters Ecoregion. Bycatch rates of porpoise in 2017–2024 were high in set gillnets (GNS) in the Norwegian Sea and Barents Sea ecoregions. In the Baltic Sea, the bycatch estimate of porpoise in 2024 was highest in set gillnets (GNS) in Division 27.3.c.22. In the Bay of Biscay and the Iberian Coast Ecoregion, the bycatch estimate of porpoise was highest in trammel nets (GTR) in Divisions 27.8.a and 27.8.b.

An annual bycatch estimate is provided for the priority seabird Balearic shearwater (*Puffinus mauritanicus*) in trammel nets (GTR) in the Bay of Biscay and the Iberian Coast Ecoregion. ICES notes a highest bycatch rate of Balearic shearwater in 2017–2024 in drifting longlines (LLD) in the Western Mediterranean Sea Ecoregion.

For priority marine turtles, the highest bycatch estimate of loggerhead sea turtle (*Caretta caretta*) was in midwater pair trawls (PTM) in the Adriatic Sea Ecoregion, and the highest estimate of leatherback sea turtle (*Dermochelys coriacea*) was in drifting longlines (LLD) in the Oceanic Northeast Atlantic Ecoregion. ICES notes a highest bycatch rate of leatherback sea turtle in 2017–2024 in drifting longlines (LLD) in the Celtic Seas Ecoregion.

Annual bycatch estimates of priority fish in 2024 are provided for the spiny butterfly ray (*Gymnura altavela*) and the common skate (*Dipturus botis* and *Dipturus intermedius*) in several ecoregion-métier combinations and for Atlantic sturgeon (*Acipenser oxyrinchus*) in set gillnets (GNS) in the Baltic Sea Ecoregion. The highest bycatch estimate of spiny butterfly ray was in bottom otter trawls (OTB) in the Aegean-Levantine Sea Ecoregion, and the highest estimate of common skate (*D. botis*) was in bottom otter trawls (OTB) in the Icelandic Waters Ecoregion.

ICES underlines that solutions to mitigate ETP bycatch in fisheries are context-specific and often require multiple technical and/or spatial management measures. To mitigate bycatch of harbour porpoise and common guillemot (*Uria aegialis*) in set gillnets (GNS), the combined use of alternative gears, closures, and acoustic deterrents (for porpoises only) offers the best mitigation potential but may impact both fisheries yields and other species.

To improve accuracy and precision in estimates of annual bycatch and multiannual bycatch rates, ICES advises to maximize and, where possible, stratify monitoring effort by area-métier combinations and to prioritize at-sea observers and electronic bycatch monitoring protocols. ICES reiterates that reporting of complete fishing and monitoring effort data for all métiers, even when no bycatch has been reported, is needed for bycatch assessments.

Request

ICES shall develop advice as a priority to provide, on the basis of data provided by Member States and any other relevant data sources, estimates of the annual total numbers of individuals of ETP species (as outlined in the ICES

ICES Advice 2025 – byc.eu – <https://doi.org/10.17895/ices.advice.30734714>
ICES advice, as adopted by its Advisory Committee (ACOM), is developed upon request
by ICES advice requesters (European Union, Faroe Islands, Greenland, Iceland, NASCO, NEAFC, Norway, and United Kingdom).

Published

ICES Special Request Advice
Baltic Sea, Bay of Biscay and the Iberian Coast, Celtic Seas, and
Greater North Sea ecoregions
Published 15 April 2024

EU request on spatial trade-off analysis between reducing the extent of mobile bottom-contacting gear (MBCG) disturbance to seabed habitats and potential costs to fisheries

Advice summary

ICES advises that fishing with mobile bottom-contacting gears (MBCG) in EU marine waters of the Baltic Sea, Greater North Sea, Celtic Seas, and Bay of Biscay and the Iberian Coast areas is spatially aggregated into core areas that account for most of the total landings weight and landings value and peripheral areas accounting for a small proportion of total landings weight and landings value. On average, for the years 2017–2022, and given the available data, ICES finds that 90% of MBCG landings value comes from less than 50% of the fished area when the percentages are evaluated at scale of c-squares (grid cells of 0.05° latitude × 0.05° longitude).

Core fishing grounds are defined as the smallest area yielding 90% of the landings value, evaluated annually at the c-square scale. ICES advises that locations of core MBCG fishing grounds vary from year to year. For individual MBCG métiers, less than 50% of the c-squares fished at any time from 2017–2022 were classified as core fishing grounds in every year in EU waters of the Greater North Sea, Celtic Seas, and Bay of Biscay and the Iberian Coast areas.

ICES conducted trade-off analyses to estimate the potential costs to MBCG fisheries in terms of reductions in MBCG fishing intensity, landings weight, and landings value to achieve a defined percentage of each Marine Strategy Framework Directive (MSFD) Broad Habitat Type (BHT) that is unfished (range of percentages 10–90%, in increments of 10%).

For the Greater North Sea and the Celtic Seas areas, ICES advises that maintaining a persistently unfished state in 50% of the extent of all MSFD BHTs within the overall area is associated with an estimated reduction of 20% of the annual mean MBCG landings value. Maintaining 70% of BHTs in a persistently unfished state in the Greater North Sea and the Celtic Seas areas is associated with estimated reduction in landings values of 31.6% and 36.7% per year respectively. Results for individual subdivisions and BHTs are provided in this document and the accompanying interactive documents.

For the Baltic Sea area, ICES advises that maintaining a persistently unfished state in 70% of the extent of all BHTs within the overall area leads to an estimated reduction of less than 7% of the annual mean MBCG landings value. This is much lower than for the Greater North Sea and Celtic Seas areas, consistent with the absence of MBCG fishing in much of the area. For the Bay of Biscay and the Iberian Coast area, landings value reductions were not estimated because of data deficiencies.

Limitations apply to the input data, analyses, and advice. These include the omission of data for most < 12 m MBCG fishing vessels, the effects of analytical scale, the use of landings value rather than gross value added (GVA) as a measure of economic impact, not accounting for the ecological and fisheries consequences of displacement or landings value by displaced vessels, and incomplete vessel monitoring system (VMS) data submissions to ICES. The consequences of these limitations are elaborated in the 'Limitations of the advice' section.

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ICES Strategic Initiative on Biodiversity Science and Advice



ICES agreed, in 2025, to establish a Strategic Initiative on Biodiversity Science and Advice (SIBSA). SIBSA will report directly to the Science and Advice Committees and will coordinate and synthesize ongoing work on biodiversity and restoration across ICES Expert Groups and beyond.

Provisional objectives:

- Co-ordinate and synthesize ongoing work across ICES Expert Groups to strengthen understanding of biodiversity.
- Support the development of methods of actionable, risk-based advice, to help managers identify and prioritize conservation, restoration and management measures to halt and reverse biodiversity loss.
- Enhance dialogue and collaboration between science, policy and other stakeholders.

Biodiversity data

Data underpin ICES' capacity to provide and advance biodiversity science and advice.

ICES Data Centre plays a central role by compiling (often through data calls), and making accessible, data on fish and fisheries, benthic habitats, sensitive species, and human pressures across the North Atlantic, Baltic, and adjacent seas. ICES links up to, and collaborates with, OBIS and GBIF that also act as biodiversity data hubs.

Among many uses, ICES data:

Underpin analyses in ecosystem and fisheries overviews, bycatch and VME advice, indicator development and reporting, spatial analyses of biodiversity status and impacts, trade-offs, and other biodiversity science and advice.

Provides essential inputs to models, assessments, analyses, and predictive tools, thus supporting development of biodiversity science and advice, including on recovery and restoration.

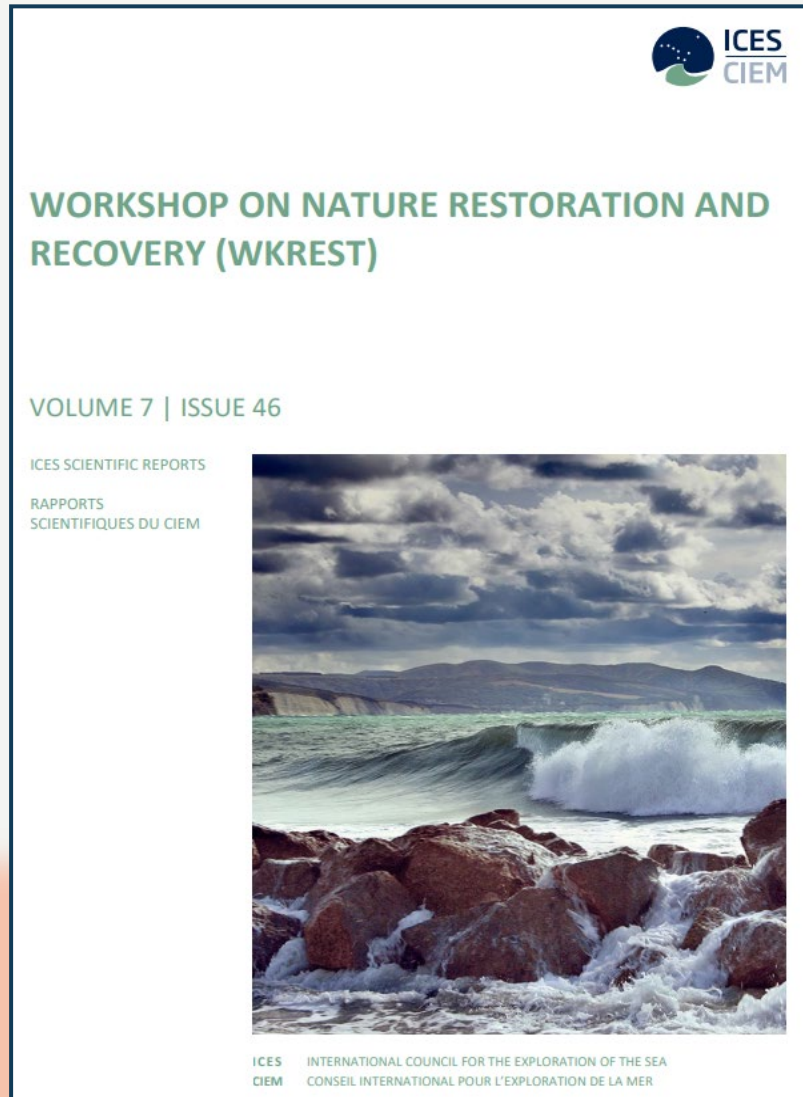
Biodiversity data

Data underpin ICES' capacity to provide and advance biodiversity science and advice.

Biodiversity questions that can be addressed depend on data and expertise. The ICES network addresses what is feasible with existing data and when it is worthwhile to invest in collecting or compiling new data

Biodiversity data collection and compilation should be viewed in the long-term as well as shorter-term. Investments from many years ago determine much of what is feasible today. Best-practice is important, not only 'let's get this done'

Workshop on Nature Restoration and Recovery



4-7 March 2025: 50 participants, plus webinar

Reported on topics including:

- definitions and examples of active and passive restoration
- how restoration can be initiated, monitored and assessed
- restoration success criteria for species and habitats
- factors affecting recovery rates

And provided impetus to establish a longer-term group

Expected topics for a WG on Marine Restoration:

- Evaluation of restoration measures
- Methods for assessing/ predicting restoration potential and recovery
- Review best restoration practices
- Advance understanding of ecological connectivity and its role in recovery and restoration

Emerging biodiversity advice

In 2026, in addition to advice on existing biodiversity topics, ICES will address requests on topics linked to recovery and restoration.

DG-ENV: how existing MSFD Descriptor 6 (Seafloor integrity) assessment and threshold-setting methods can be applied to support the requirements of the EU Nature Restoration Regulation, including defining favourable reference conditions for relevant habitats

UK on behalf of GNSBI: identify a core set of existing indicators, common to all GNSBI countries, to track nature restoration progress at a sea basin scale, their utility for reporting in relation to existing legislation, data availability to calculate indicator values and gaps in coverage

DG-ENV: recurrent request on the distribution of mobile bottom-contacting gear fishing pressure, habitat impact and recovery status and recovery potential, in relation to MSFD Descriptor 6 and the Nature Restoration Regulation.

ICES biodiversity science, data and advice



We welcome MIACO feedback on ICES plans for advancing biodiversity science and advice, especially the extent to which these plans address your existing and expected interests, questions and concerns.

Thank you

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