NANS&EA Regional Coordination Group

Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017

on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008 (recast).

Commission Delegated Decision (EU) 2021/1167 of 16 July 2021

establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sectors from 2022

Commission Implementing Decision (EU) 2021/1168 of 16 July 2021

establishing the list of mandatory research surveys at sea and thresholds as part of the multiannual Union programme for the collection and management of data in the fisheries and aquaculture sectors from 2022

NANS&EA Regional Work Plan for data collection in the fisheries sectors

2025-2027

Version 1 (to be discussed at RCG NANSEA 2023)

2023/MM/DD

CONTENTS

Data collection framework at regional level

General comment: Use this text box to describe how data collection is organised in your Region (countries involved, contact information)

This document and the related set of tables form the Regional Work Plan for the period 2025-2027 prepared by RCG North Atlantic, North Sea and Eastern Arctic (NANSEA). These two documents contain only elements of data collection which are regionally coordinated and were agreed at RCG NANSEA. All coordination initiatives that are under development can be found on the RCG internet webpage (https://www.fisheries-rcg.eu/level-of-ambitions/).

The countries contributing to the data collection activities in the NANSEA region are Belgium, Denmark, Estonia, France, Germany, Ireland, Latvia, Lithuania, Netherlands, Poland, Portugal, Spain and Sweden.

The RWP NANSEA 2025-2027 contains the following textboxes and tables:

- **Section 1: General information**
    - Textbox 1A: Test studies description
    - Textbox 1B: Other data collection activities
        - Table 1.2: Regional and International coordination
        - Table 1.3: Bilateral and multilateral agreements
- **Section 2: Biological data**
        - Table 2.1: List of required species/stocks
        - An addition of a control table is proposed for countries to compare declared landings in the RDB and in EUROSTAT; this is only for information purpose.
    - Textbox 2.3: Diadromous species data collection in freshwater
    - Textbox 2.4: Recreational fisheries
    - Textbox 2.5: Sampling plan description for biological data
    - Textbox 2.6: Surveys at sea
        - Table 2.6: Surveys-at-sea
- **Section 3: Fishing activity data**
    - Textbox 3.1: Fishing activity variables data collection strategy
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- **Section 4: Impact of fisheries on marine biological resources**
    - Textbox 4.3: Fisheries impact on marine habitats
- **Annex 1.1: Quality report for biological data sampling scheme**
    - Regional stomach content sampling

Process for filling NWP

As a general rule, the information relevant to a given country (use the filter on the column MS to select your country) in the tables need to be copied and paste to the relevant tables of the NWP. The information given in textboxes and annexes are to be referenced in the relevant textboxes and/or tables of the NWP and should not be duplicated. Specificities regarding some Tables and Text boxes are given as follows:

Table 1.3 (bilateral and multilateral agreements), the agreements listed are a compilation of the available agreements presented in the National Workplans and relevant for the NANSEA region. MS should check if

the agreements are valid for 2025-27 RWP and if more agreements need to be included in this table.

Table 2.1 (list of required stocks), is not currently available but planned to be included in the RWP 2025-27 with the most recent reference years, i.e. 2020-2022. The work initiated in Fishn'Co, for the RWP NANSEA test run 2022, has continued and is about to be finalised in a tool (https://github.com/ices-eg/RCGs/tree/master/NWPtools/table_2_1) which will enable full transparency and easiness of maintenance and implementation.

Textbox 2.6 (research surveys at sea), the information given in the RWP relates to the internationally coordinated elements of the surveys. The National specificities and the relevant Annexes 1.1 remain to be described in MS NWP.

Table 2.6 (research surveys at sea), only the number of days are given; All other quantitative indicators remain to be presented in MS NWP.

Text Box 1a: Test studies description

General comment: This text box fulfils Chapter II, section 1.2 of the EU MAP Delegated Decision annex. This text box applies to the work plan and the annual report.

The following case studies are still under development and not expected to be finalised at the start of the 2025-2027 3-year period. They are given here as information for preparing the ground for future updates of the RWP.

Trawl Fishery in Iberian Waters Case Study

1. Aim of the test study

The case study of the Trawl Fishery in Iberian Waters (27.9.a and 27.8.c) involves two countries with relevant stake in the fishery (Portugal and Spain). The regional coordination for this case study in 2025-2027 is at level 3, i.e., common monitoring strategy. In this case study, this level of regional coordination includes:
- coordinated data collection with similar methods used, namely: sampling protocol (Annex 1.1);
- detailed data uploaded into common databases (e.g., Intercatch and RDB which will transition to RDBES) indicating that data can be used on more detailed levels across MS;
- data raised on a national level with standardized and transparent methods (RDBES);
- aggregated data made publicly available as region.

2. Duration of the test study

The test study is expected to be finalized during the next EU Work Plan period 2025-2027

3. Methodology and expected outcomes of the test study

Additional information on sampling schemes and sampling frames are given in Sampling protocol in Annex 1.1 of the RWP.

Freezer Trawler Case Study

1. Aim of the test study

The EU freezer trawler fleet targeting small pelagic species (mackerel, herring, horse mackerel, blue whiting, sprat and argentine) in the North Atlantic and North Sea was identified as a potential candidate for the development of a regionally coordinated sampling plan. The fleet comprising mainly Dutch, German, UK and French flagged vessels is sampled currently by the Netherlands and Germany. The primary aim of this case study is to propose a regional sampling plan for the European pelagic freezer trawler fleet to be considered for inclusion in a regional work plan.

2. Duration of the test study

The test study is expected to be finalized at the beginning of the next EU Work Plan period 2025-2027.

3. Methodology and expected outcomes of the test study

Based on information submitted in response to an international data call for trip level landings by species, an analysis of the fleet structure and its operations carried out within the case study indicated:
- There are six stocks exploited by the freezer fleet that would be suitable for the development of a regionally coordinated sampling plan. These stocks are exploited by the majority of the fleet flag nations, and follow a traditional pattern of seasonal fisheries;
- The fleet structure is stable with relatively few vessels participating. Annual changes in the participating vessels are minimal;
- The fleet operates from and lands into a small number of readily accessible major ports

The analysis was finalised and the results were presented to the RCG NA NS&EA 2021 and RCG Baltic 2021.

Although a degree of cooperation exists between the Dutch and German sampling programmes, they are distinct, with differing sampling protocols and cannot be considered either fully randomized or harmonized. As a result, overall sampling coverage for the freezer fleet as a whole is unlikely to be optimized for the total allocated resources and is potentially less efficient than a regionally coordinated sampling programme.

A main difference between the sampling programmes of both involved countries is that the Dutch programme is designed to meet the requirement for bycatch monitoring only whereas the national assessment data needs are covered by a market sampling programme. In contrast, the German observer programme is designed to fulfil the national stock assessment requirements plus the monitoring of bycatch and catch composition. Therefore, the observer programme was selected (rather than the market sampling scheme) as it likely represents the most efficient approach to implementing a coordinated sampling programme with the other sampling nation.

The group analysed data from the Dutch observer programme in order to develop a setup for a pilot study for this approach. The analysis was finalised and the results were presented at the technical meeting of the RCG NANSEA 2022 and RCG Baltic 2022. In a first step a Dutch fishing trip in the herring fishery was carried out in a new sampling design following the analysis which meets the requirements for assessment data collection and bycatch monitoring in quarter 3/4 in 2022.

The results of the pilot trip which are stored in the Dutch national database are currently reviewed, analysed and compared with the Dutch market sampling scheme and the German observer sampling scheme. Following this analysis, it will be investigated if the sampling scheme can be extended to all NS Herring trips in 2023. Appropriate harmonized protocols for other fisheries still needs to be developed and the possibility to pool the Dutch and German sampling schemes investigated.

Bay of Biscay (BoB) common dolphin (Delphinus delphis) case study

1. Aim of the test study

Bycatch of common dolphins in the BoB has been identified as a major problem by the European Commission. In connection with ICES/WGBYC and ICES/WKPETSAMP, the objective of this case study is to identify which fisheries have the greatest impact. This identification of fisheries should be done at the highest possible resolution. Once the fisheries have been identified, the Member States to which these fisheries belong are detailed, and based on the effort exerted, the importance of each one of them. With this information, the objective is to improve the sampling of these fisheries at the regional level.

2. Duration of the test study
 Not expected to be implemented before 2024-2025.

3. Methodology and expected outcomes of the test study

The methodology will be:

- Identification and characterization of fisheries/metiers at the right resolution considering bycatch impact.
- Evaluate the sampling coverage of these fisheries/metiers
- Align observers' protocols between countries
- Standardize effort calculation methodologies and identify relevant variables needed to collect under the transversal data to improve bycatch estimates (e.g., number of nets, soak time etc. in the case of passive gears)
- Identify minimum sampling coverage per fishery/metier.
- Ensure minimum sampling coverage for fisheries that currently have no/low coverage.
- Methodologies to collect bycatch data considering different fleet segments.
    - Scientific observers
    - New technologies (e.g., CCTV)
    - Fishermen collaboration

North Sea bass (Dicentrarchus labrax) stock marine recreational fisheries sampling

1. Aim of the test study
The North Sea seabass stocks were identified by the ISSG Marine Recreational Fisheries as a candidate for a regional sampling plan, because it is a stock that involves several Member States (MS) including a non-EU MS (UK).

2. Duration of the test study
First steps not to be taken before 2024 and therefore no implementation planned during the Work Plan period 2025-2027.

3. Methodology and expected outcomes of the test study
As a first approximation, the importance in terms of catches of this stock by MS has been reviewed. In addition, a first review of the available data (historical data series, etc.), methodologies used for data collection, etc. has also been carried out. With this information, the possible coordination of sampling by MS is being discussed, with the aim of being able to incorporate this information into the assessment groups.

Assessment of the relative risk of bycatch for the different gear types and/or metiers

Within the FishPi projects[1] and adopting the methodology used by the ICES WGBYC group (ICES 2022), a first assessment was carried out, identifying the fishing gears with the highest risk of PETS bycatch, and adding the sampling coverage of these fisheries. This assessment has been updated by the ISSG PETS in recent years. In addition, the ICES WGBYC group has also been working on this risk assessment, introducing improvements, including the potential risk of each of the species groups or PETS species at high risk of overlap in each of the ecoregions both temporally and spatially, crossing the effort exerted by the different fisheries in those ecoregions.

This assessment makes it possible to identify the high-risk fisheries from PETS bycatch, but also the coverage of these fisheries, taking into account the effort exerted by these fisheries. The information obtained through this assessment at regional level should allow the RCGs to identify which are the main fisheries that should be sampled at regional level based on the needs of the main end-users.

[Note] *During the RCG 2023 technical meeting, the high-risk fisheries by ecoregion and by species or group of PETS species will be presented. The aim is for the RCG to be able to identify the fisheries that need to be targeted and to be able to prioritise sampling programmes based on the needs of the main end-users. Currently, there is already a table identifying the most high-risk fisheries by ecoregion, their sampling coverage and recommendations on which fisheries should be increased in terms of sampling effort and which may be oversampled (ICES 2023).*

Text Box 1b: Other data collection related activities

General comment: This text box applies to the work plan and annual report. The activities described here are those funded by the DCF but fulfil objectives under other EMFAF priorities, like marine knowledge, or activities funded by the DCF, but without a direct link to the EU MAP specific requirements.

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[1] https://www.fisheries-rcg.eu/finished-projects/

RCG's Secretariat

1. Aim of the activity

Support the operation and functioning of the RCG´s Secretariat for a fluent regional coordination of data collection activities, as stipulated by Article 9 of the DCF Regulation (EU) 2017/1004.

2. Duration of the activity

2025-2027

3. Methodology and expected outcomes of the activity

The Secretariat´s organizational structure has been set up and pilot tested throughout the SecWeb project (MARE/2020/08 grant). The key functions of the RCG´s Secretariat have been determined in close collaboration with all RCGs, in particular with RCG and Intersessional Subgroups (ISSGs) chairs. A business model has been developed. In addition, good practices in communication within and among the RCGs have been promoted and installed. The overall capacity to reach out to a wider public and increase the visibility of the work and output of the RCGs has been boosted with the development of a dedicated website and the consolidation of a visual identity.

RCG chairs and the RCG´s network have acknowledged the added value of having an RCG´s Secretariat to the overall aim of improving data collection activities.

Based on the SecWeb project outputs the proposed activities will connect the whole RCG network and stakeholders to work together on common goals. The Secretariat provides fluent administrative and coordination support for more efficient regional coordination liberating national experts involved in data collection activities from heavy burden administrative tasks.

Overall expected outcomes:

- A full-time dedicated Secretariat support service for the RCGs enables a consistent approach to organising RCG activities, facilitates communication, and enhances the intersessional work, supporting also the work of sub-groups.
- A dynamic and permanently updated website (https://www.fisheries-rcg.eu/) will be kept available including as features:
    - Integration – allowing seamless synchronization with third-party information needs and requests;
    - Responsive display – to serve content across multiple devices, screens, and browsers;
    - User experience- maintaining a satisfactory user experience throughout the website sections;
    - Accessibility – To any interested visitor in a user-friendly way across the website sections;
    - Retention- keeping visitors coming back to the website;
    - Links to relevant restricted access sites and virtual environments.

The Visual identity for the RCGs is increasingly consolidated and visibility and understanding of the work by the RCGs is enhanced for the relevant stakeholder groups.

A regularly updated Stakeholders' database improves the communication function among the RCGs' experts and the stakeholders' community.

Internal communication protocols and helpdesk in place makes it easier for any newcomer to efficiently join, adopt responsibilities, and contribute to the RCGs objectives and work commitments.

The public description of the secretariat functions, operational working protocols and commitments will build trust and enhance the whole network transparency and accountability.

Regional data base and estimation System (RDBES)

1. *Aim of the activities*

    To contribute to the development and operation of the Regional Database and Estimation System (RDBES)

2. *Duration of the activity*

    2025 – 2027

3. *Methodology and expected outcomes of the activity*

    The RDBES is a fundamental tool for regional coordination. The RDBES gathers in a single data base catch, effort and sampling data for biological variables and PETs together with information on the sampling design. The data model and the estimation system have been agreed regionally, and it is an ongoing work which is developed and improved every year. i. The RDBES is planned to replace both the existing ICES InterCatch and RDB database systems and has an important part to play in increasing transparency and improving the quality of stock assessment within ICES. A summary of the status and the roadmap for the RDBES can be found in the annual WGRDBESGOV report.

    This transition to RDBES requires an important dedication by countries:

    -   To adapt their internal processes to provide data in the RDBES data model;
    -   To calculate required estimates (discard weight, landed weight of species which are landed together, number at length, number at age) using the RDBES data model;
    -   To reproduce the data management which used to be done in IC, using the estimates coming from the RDBES;
    -   To take advantage of the WK designed to give countries support in the transition (i.e. WKINTRO, WKRAISE&TAF, WKTAF);
    -   To participate in the development of the RDBES through the core group and the different ICES WG and ISSGs giving feedback about different data types and end user needs (including catch ad effort data, SSF data, biological variables, MRF, PETs, SSF…)

The RDBES developments planned for different data types, such as SSF, recreational fisheries and PETs are embedded in the respective textboxes.

Regional Coordination taking place in ISSGs and pan regional cooperation between RCGs

1. *Aim of the activities*

    Intersessional work at the RCG NANSEA

2. *Duration of the activity*

    2025 – 2027

3. *Methodology and expected outcomes of the activity*

    Regional cooperation is meant to improve the efficiency of data collection through sharing of expertise, data, best practices, knowledge and collaborative tasks. The RCGs bring together several Member States to coordinate planning and implementation of data collection. Their workplan across the year, from one round of the annual technical meetings to the next, is supported with the setup of the Intersessional Subgroups.

    In these subgroups the experts concentrate on specific Thematic Focus Areas, and sometimes they are

pan-regional. During the relevant RCG's technical meetings, the different ISSGs present progress and hurdles encountered across the period and propose the update of their Terms of Reference with the tasks and targets for the new intersessional period for approval. The work performed by ISSG is essential for RCG technical meeting preparation and meeting discussions and Member States are requested to name experts in the different ISSG relevant to them and these experts should allocate a significant amount of time (on average 40 hours per ISSG) for carrying the work during the intersessional year.

The ISSG may change over the years as task are completed and new needs are coming up. An updated list of the ISSG operating every year under the umbrella of the RCG NANSEA can be found here: https://www.fisheries-rcg.eu/rcg-nansea/

A non-exhaustive list of the ISSG is presented below:

- ✓ ISSG End-user and RCG interaction
- ✓ ISSG RDB catch, effort and sampling overviews
- ✓ ISSG Metier and transversal variable issues
- ✓ ISSG Data Quality
- ✓ ISSG Electronic Monitoring Technologies
- ✓ ISSG Diadromous Fishes
- ✓ ISSG Surveys
- ✓ ISSG Optimized and Operational Regional Sampling Plans
- ✓ ISSG Optimisation of PETS bycatch sampling
- ✓ ISSG Evaluation of the data collected for the Small-Scale Fisheries at EU level
- ✓ ISSG Regionally coordinated stomach sampling
- ✓ ISSG Recreational fishery
- ✓ ISSG Development of Draft Regional Work Plan
- ✓ ISSG National Correspondents

Marine Recreational Fisheries Surveys Quality Assurance Toolkit (QAT)

1. *Aim of the activities*

The WGRFS Quality Assurance Toolkit (QAT) was created in 2013 (ICES, 2013). It was developed to ensure the quality of recreational catch estimates from national surveys, and to document bias in data collection to satisfy ICES and EU MAP requirements. This evaluation aimed at providing statements of quality of MRF data for end-users including stock assessment scientists, and identifying potential improvements to survey design (ICES, 2018). The QAT has been used to assess the quality and provide guidance on the design and implementation of multiple types of national survey programmes. Therefore, this QAT should also be applied equally to regional sampling plans when developing and describing sampling schemes.

SECTION 2: BIOLOGICAL DATA

Text Box 2.3: Diadromous species data collection in freshwater

General comment: This Textbox fulfils Article 5(2)(a), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II, point 2.1(b) and point 2.3 of the EU MAP Delegated Decision annex. Use this text box to give an overview of the methodology used to collect data from freshwater commercial fisheries for salmon, sea trout and eel, and from research surveys on salmon and sea trout in freshwater, and on eel in any relevant habitat including coastal waters.

1 – Methods selected for collecting data

Research surveys on salmon and sea trout in fresh water consist typically of estimation of parr densities by electrofishing, smolts counts by smolt trapping and spawner counts by echo sounding or other electronic counters. Eel recruitment is estimated by scoop nets, dipnets, trapping, small-meshed nets (deployed from trawlers) and also by electrofishing (elvers and yellow eel). Descending silver eels are counted by echo sounders or other electronic counters.

The ISSG Diadromous has reported the needs and data used for assessment by end users. The group has also mapped use of electrofishing in Member States. This work aims to harmonise the method and criteria for selecting the fishing sites to make the collect data comparable between countries. There are also possibilities to collect other data that are used in assessments (genetics, concentration of chemical substances, parasites, diseases, etc.) in the RWP framework which will be considered in future work.

The ICES Working group on North Atlantic Salmon (WGNAS) is the end user for the salmon data. The WGNAS is developing the new life cycle model which will take in diverse data. The new model and corresponding data needs will be benchmarked in 2023. The stock units of North Atlantic salmon cover presently 4 EU countries (France, Ireland, Sweden and Finland) and in 6 non-EU countries. In future also data from Spain, Netherlands, Germany and Denmark will potentially be used. Most of the salmon rivers are in the non-EU countries, which means that only part of the data input comes from the EU countries. The data collection is coordinated by the WGNAS. EU countries collect the Atlantic salmon data partly in their national programs.

In relation to sea trout in the NANSEA area there is no recognised end user for the data. ICES WGTRUTTA is developing a generic assessment model for the sea trout. Specification of the data needs are presently processed.

The joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL) is end-user for the eel data. In addition, MSs use the data in the execution of the national management plans. A data call for WGEEL was formulated for the first time in 2022. The data call covered Baltic, NANSEA and Mediterranean regions. There is still a need to further develop an assessment model for the eel stock both in a smaller scale and more holistic pan European scale. These models would be able to provide for estimates on the stock on both Eel Management Units (EMU) (EU) and whole stock level (ICES). Model development is expected to be long process aiming at a first benchmark in 2027.

Potential regional coordination and work towards regional work plan for salmon, sea trout and eel will take place in the ISSG on diadromous species.

Text Box 2.4: Recreational Fisheries

General comment: This text box fulfils Article 5(2)(a), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II, point 2.2 of the EU MAP Delegated Decision annex. Use this text box to give an overview of the methodology used for the data collected on marine and freshwater recreational catches.

Selection of species for the different regions in addition to the mandatory species

Currently, the mandatory species for data collection under the DCF, is very limited to a few species. However, based on the studies conducted, including the pilot studies carried out by several Member States during 2019-2021 (STECF EWG-21-09[1]), it has been found that many species targeted by the MRF are not only those identified in the current regulation as priority species. For these reasons, the species prioritization at regional level for MRF data collection was considered essential by the different RCGs. Because of this need, the ISSG Recreational fishery together with ICES WGRFS, started working on a methodology (ICES 2023), based on criteria, that will allow the identification of these priority species for each of the regions.

The approach is similar to a Productivity Susceptibility Analysis (PSA) (e.g. McCully Phillips et al., 2015). This is based on a ranking system, (from 1 to 3) for 14 questions divided into 4 broad categories: catchability, MRF biological importance, existing regulation, and socio-economic relevance. These had to be separately evaluated and weighted, generating a ranking of species.

[Note] T*his methodology will be applied by the ISSG Recreational Fishery, and with ICES WGRFS support, a first exercise will be carried out. This will allow to produce a preliminary list of priority species by region. This preliminary list of priority species by region, will be presented to the RCGs during the technical meeting in June 2023. The aim of this list of species is to promote a discussion by the RCGs to decide which species should be included as mandatory to collect data, together with the species that are mandatory to collect today within the DCF.*

RDBES incorporation of recreational fisheries data

The incorporation of the Marine Recreational Fisheries (MRF) data to the RDBES is considered as a key tool for the sampling coordination at regional level. As it occurs with the commercial fisheries data, it´s essential that marine recreational fisheries (MRF) data are also included in the RDBES data base. Given the characteristics of the current MRF data, the preferred solution is a data base to store raised tonnages and numbers of fish caught and released by area and year, alongside length–frequency distributions.

ICES Working Group on Recreational Fisheries Surveys (WGRFS) revised the data model proposed some years ago for MRF catch and effort data and launch a voluntary test data call during 2022. It was concluded that there were no big problems in providing the data requested in the developed data models. Therefore, it was agreed to use this data model for all member states to incorporate the MRF information in the RDBES.

Text Box 2.5: Sampling plan description for biological data

General comment: This text box fulfils Article 5 (2)(a) and (b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter 2, point 2.1(a) and 4.1 of the EU MAP Delegated Decision annex. This text box complements Table 2.5.

List of PET Species agreed

List of PET Species has been developed at an ICES region-wide level by WGBYC and also the assessment of status for all seabirds and marine mammals by ecoregion. In addition, in 2020, ICES developed a list of fish species of bycatch relevance for each ICES ecoregion. These species lists will be used by the RCGs to prioritize future regional work plans regarding PETS sampling programmes. These species lists are living documents and will be subjected to periodic review and update.

Link to the list of PET Species:

- https://ices-library.figshare.com/articles/report/ICES_Roadmap_for_bycatch_advice_on_protected_endangered_and_threatened_species/19657167 (Annex1 and Annex 2 pgs. 8-36).

RDBES incorporation of bycatch data

WGBYC members have worked with the RDBES core group over the last years to make sure some formats were suitable for bycatch data (ICES 2023). The data formats are already agreed and prepared and during 2023-2024, some tests will be carried out by ICES WGBYC and also by ISSG Optimisation of PETS bycatch sampling. The results of these tests will allow to assess the incorporation of all PETS bycatch related data into the RDBES, essential for the regional coordination of potential regional sampling plans.

Text Box 2.6: Research surveys at sea

North Sea and Eastern Arctic (ICES areas 1, 2, 3a, 4, 7d)

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

International Ecosystem Survey in the Nordic Seas (ASH; ICES acronym: IESNS)

1. Objectives of the survey

The International Ecosystem Survey in the Nordic Seas (IESNS) is an acoustic/pelagic trawl survey carried out in order to investigate distribution and migrations of the Atlanto-Scandian herring (ASH), blue whiting and other pelagic fish and to produce a biomass index for herring and a recruitment index for blue whiting for the ICES Working Group on Widely Distributed stocks (ICES WGWIDE). Furthermore, hydrographic conditions and plankton abundance in the Norwegian Sea and adjacent waters are monitored in order to investigate distribution and migration of herring and other pelagic fishes are influenced by environmental conditions.

The survey is carried out in April/May.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in

Table 2.6 for this specific survey.

The survey design and sampling protocol is described in the survey manual:

http://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%209%20Manual%20for%20International%20Pelagic%20Surveys%20(IPS).pdf

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The participating Member States and vessels are listed in the survey manual (see above).

The survey is a joint EU survey conducted using the Danish R/V Dana

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

A cost sharing agreement is in place, to reimburse Denmark for their ship time at the relative share of their TAC. Germany, Ireland, the Netherlands and Sweden participate financially and with the provision of scientific staff (see Table 1.3 for details).

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

North Sea Beam Trawl Survey (BTS)

1. Objectives of the survey

Target species of this survey are mainly sole and plaice but also associated species. The survey provides densities (abundance and biomass) indices for the target species as well as hydrographic data. The survey is conducted annually in August-September.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

All surveys coordinated by WGBEAM are carried out with a beam trawl. Depending on the local circumstances and the ship's capacity, the width and rigging of the beam trawls varies. Germany uses a light 7.2 m beam trawl.

Manual:

https://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%2014%20-%20Manual%20for%20the%20Offshore%20Beam%20Trawl%20Surveys%20(WGBEAM).pdf

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The Beam Trawl Survey in the North Sea and Eastern English Channel is carried out by Belgium, Germany, Netherlands and UK-Cefas.

The research vessels are BELGICA for Belgium, SOLEA for Germany, TRIDENS for The Netherlands and CEFAS ENDEAVOUR for the UK.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants (e.g. coverage of certain areas in a certain time frame) are allocated by the WGBEAM. Each participating country is responsible for the activities conducted on its national part of the international survey.
Cost sharing: There is currently no cost sharing agreement in place for this survey.

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Kattegat Cod Survey (CODS_Q4)

1. Objectives of the survey

The survey is a combined Danish-Swedish fisherman-scientist survey. The goal of the Kattegat cod survey is to estimate the abundance, biomass and distribution of cod and to establish a fisheries independent time series of catch and effort series. Furthermore, a recruitment index is established. The results have for the first time been used in 2015, together with commercial catch and effort data, to strengthen the scientific advice on the cod stock in Kattegat. The survey is carried out in November/December.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Initially, 4 commercial trawlers (2 Swedish and 2 Danish vessels) participated in the survey. In 2016, Sweden continued to use commercial vessel, whereas Denmark used the new research vessel RV Havfisken but with the same trawl as previously on the commercial vessels.

The survey is designed as a stratified random bottom trawl survey. The survey area is stratified in three strata based on information from commercial fishers on expected densities of cod: a stratum with expected high density of cod, a stratum with medium density and a stratum with low density. In 2010 and 2011, there was a minor re-stratification to adopt the areas to the catch information collected during the former years. In 2013, a fourth stratum was added to better assure data from the area closed for fisheries. Each stratum is further subdivided in 5*5 nm squares. The high density, medium density and closed area stratum has been allocated relatively more stations than the other strata.

Each vessel is assigned 20 or 40 stratified randomly selected survey squares, and all vessels are assigned the same proportion of hauls from each stratum.

Within each square, the skipper decides on the best way to fish at the location, e.g., set position and tow direction. The survey gear is a 112 feet commercial bottom trawl with 70 mm liner in the cod- end. Each haul is sorted, and all species are recorded, length measured and weighted. For target species biological parameters are collected on fish length, age, weight, sex and gonadal maturity. In case of large catches subsampling is performed.
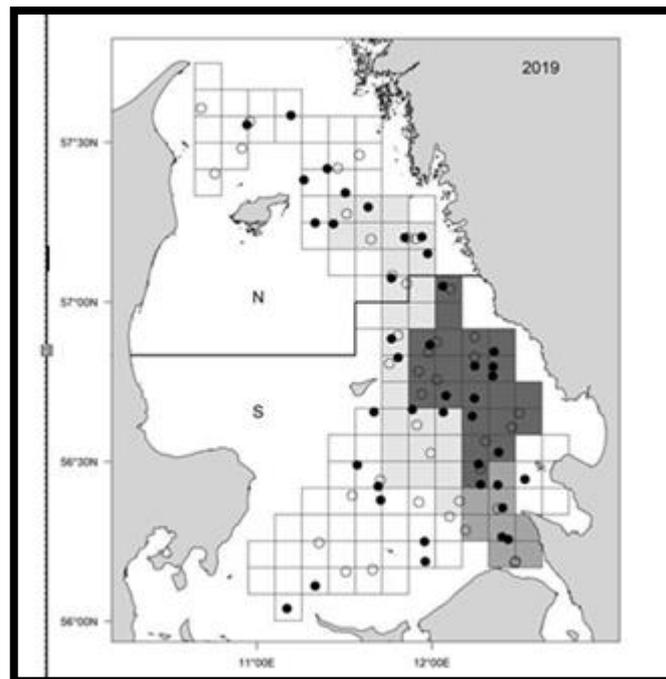
Map showing the CODS Q4 survey area and stratification (in grayscale). N (north) and S (south) identify the two domains used for biological sampling. The Swedish (filled symbols) and Danish (open symbols) set positions in 2019 are shown to illustrate the spatial distribution of sampling stations.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

Survey planning and data analysis is conducted in close cooperation between Denmark and Sweden and the survey results are provided to ICES WGBIFS.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
NA

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Demersal Young Fish Survey (DYFS)

1. Objectives of the survey

The aim of the survey is to provide abundance indices of sole, plaice, whiting and cod as well as of other demersal young fish and brown shrimp. The indices are part of a time series which started in the early 1970's. The collected data are stored locally in a national database and will be submitted to the ICES DATRAS. Data are used by ICES WGNSSK, WGBEAM and WGCRAN and are relevant to the trilateral Wadden Sea Monitoring Programme (TMAP). Comparable investigations are conducted by NLD and BEL. The German part of the survey consists of short trips on chartered commercial cutters and the RV Clupea annually in September-October.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

The survey gear is a 3m shrimp beam trawl which is deployed in the coastal area of the German Bight. Fishing vessels (shrimpers) are chartered to cover the gully systems in the Wadden Sea. Additionally, the German research vessel Clupea covers the whole coast along the German Bight within the 12nm zone (fixed station grid). Biological sampling (otoliths for plaice) is based on statistical areas along the coast.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

Belgium covers the Belgian coast with one RV. The Netherlands cover the Dutch Wadden Sea with two smaller RVs and the coastal area with RV Isis. Germany covers the German Wadden Sea areas and coastal zone along the German Bight coast with chartered fishing vessel and RV Clupea.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants (e.g. coverage of certain areas in a certain time frame) are allocated by WGBEAM. Each participating country is responsible for the activities conducted on its national part of the international survey.
Cost sharing: There is currently no cost sharing agreement in place for this survey.

Name of the research survey

International Bottom Trawl Survey (IBTS_Q1)

1. Objectives of the survey
   - To determine the distribution and relative abundance of pre-recruits of the main commercial species with a view of deriving recruitment indices;
   - To monitor changes in the stocks of commercial fish species independently of commercial fisheries data;
   - To monitor data for the determination of biological parameters for selected species;
   - To collect hydrographical and environmental information;
   - To determine the abundance and distribution of late herring larvae in order to provide the ICES Herring Assessment Working Group (HAWG) with a recruitment index for the North Sea herring stock.

Major target species trawling (GOV): herring, sprat, cod, haddock, whiting, saithe, Norway pout, mackerel, plaice
Major target species plankton tows (MIK): herring

In addition, the distribution and relative abundance of all fish species and selected invertebrates is recorded. The survey is conducted annually in January-February.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Bottom trawling with a standard GOV trawl; CTD casts; Plankton net haul with a MIK net; Survey manuals:

ICES. 2020. Manual for the North Sea International Bottom Trawl Surveys. Series of ICES Survey

Protocols SISP 10-IBTS 10, Revision 11. 102 pp. http://doi.org/10.17895/ices.pub.7562 and

ICES. 2017. Manual for the Midwater Ring Net sampling during IBTS Q1. Series of ICES Survey Protocols SISP 2. 25 pp. http://doi.org/10.17895/ices.pub.3434

3. For internationally coordinated surveys, describe the participating Member States/vessels and the relevant international group in charge of planning the survey

France: RV Thalassa, The Netherlands: RV Tridens, Germany: Walther Herwig III, Denmark: RV Dana, Sweden: RV Dana, Norway: RV G.O. Sars, Scotland: RV Scotia

Coordinating bodies are the ICES International Bottom Trawl Survey Working Group (IBTSWG) for trawl samples and the ICES Working Group on Surveys on Ichthyoplankton in the North Sea and adjacent seas (WGSINS) for plankton sampling.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants (e.g. coverage of certain areas in a certain time frame) are allocated

by the IBTSWG. Each participating country is responsible for the activities conducted on its national part of the international survey.

Cost sharing: There is currently no cost sharing agreement in place for this survey.

Name of the research survey

International Bottom Trawl Survey (IBTS_Q3)

1. Objectives of the survey

The main objective of the IBTS Q3 is to provide abundance indices of the target species haddock, cod, saithe, whiting, Norway pout, herring, sprat, mackerel and plaice in the North Sea and the Skagerrak. Germany participates as one of six nations in the internationally coordinated Q3 survey. Apart from abundance indices, information is collected on individual length, weight and age for the target species. Additional age data are obtained for selected fish species to be evaluated for future use in assessments. Furthermore, abundance, weight and length data are collected for all fish species caught. This serves the second objective to obtain information on changes in the abundance and distribution of fish species not commercially targeted, and in the composition of regional groundfish assemblages.

The survey is conducted annually in July-August.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Types of data collected include biological data for the groundfish community, as well as additional data on the bycatch of benthic invertebrates. The German part of the survey includes a dedicated sampling programme of benthic epifauna and sediments. Further accompanying data recorded include information on stations and gear performance, hydrographic data, observations of weather and sea state. The data are stored locally in databases in the national institutes and submitted to public international databases at ICES. - A detailed description of the survey methods can be found in the corresponding survey manual: https://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SI SP%2010%20-%20E2%80%93%20Revision%2011_Manual%20for%20the%20North%20Sea%20Inte rnational%20Bottom%20Trawl%20Surveys.pdf

3. For internationally coordinated surveys, describe the participating Member States/vessels.

UK England: RV Endeavour, Germany: FRV Walther Herwig III, Denmark: RV Dana, Sweden: RV Svea, Norway: RV Kristine Bonnevie, UK Scotland: RV Scotia

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants (e.g. coverage of certain areas in a certain time frame) are allocated by the IBTSWG. Each participating country is responsible for the activities conducted on its national part of the international survey.

Cost sharing: There is currently no cost sharing agreement in place for this survey.

Name of the research survey

International Herring Larvae Surveys (IHLS)

1. Objectives of the survey

The main objective of the survey is to help to assess the herring stocks in the North Sea. The results of the herring larvae surveys are used to calculate an overall biomass index of the SSB of North Sea autumn-spawning herring as well as the relative contribution of different stock components on the total herring reproduction. The surveys monitor the annual distribution and abundance of herring larvae at the main spawning locations, the length frequency of herring larvae, as well as ambient water temperature and salinity. All relevant herring larvae data are stored together with basic hydrographic information in the ICES eggs and larvae database. The surveys are conducted annually during autumn (September) and winter (January).

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Herring larval abundance is surveyed at the major herring spawning grounds in the North Sea, e.g. in the Orkney/Shetland area, the Buchan region, the Central North Sea and the Southern North Sea. Standard gears are high-speed GULF samplers, deployed in a double oblique manner to near the seabed and back to surface. Stations are located on a 10 by 10 nautical miles grid. This grid includes every square that is known to contain herring larvae less than 10 mm. Herring larvae are sorted from the samples and length-measured. The number of larvae per m^2 at each station is used to calculate mean numbers of larvae per m² for each ICES rectangle (consist of nine IHLS stations in total). These values are raised by the sea surface corresponding to the relevant rectangle and summed over the total area to obtain larvae abundance indices. The manual of the IHLS is available as Annex 7 to the ICES WGIPS Report 2010.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

Germany and The Netherlands participate in the IHLS sampling. With regard to the prevailing weather conditions, they most frequently use larger research vessels, e.g. FRV "Walther Herwig III" and RV "Tridens".

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants (e.g. coverage of certain areas in a certain time frame) are allocated by WGSINS. Each participating country is responsible for the activities conducted on its national part of the international survey.
Cost sharing: There is currently no cost sharing agreement in place for this survey.

Name of the research survey

North Sea Herring Acoustic Survey (NHAS)

1. Objectives of the survey

The survey aims to provide an annual estimate of the distribution, abundance and population structure to inform the assessment of the following herring and sprat stocks: Western Baltic spring- spawning herring (in ICES Divisions 4 and 3a), North Sea autumn-spawning herring (in 4, 3a and 7d), West of Scotland herring (in 6aN), Malin Shelf herring (west of Scotland/Ireland in 6aN-S and 7b,c), North Sea sprat (in 4) and sprat in 3a (Skagerrak/Kattegat). The derived estimates and age structure of herring and sprat are used as tuning indices in the respective assessments and are submitted annually to the ICES Herring Assessment Working Group (HAWG). The survey is conducted annually in June-July.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Data collected include 1nm NASCs for clupeid fishes (aggregated and disaggregated acoustic data), age and length distribution for all clupeids in the investigation area, maturity at age.

Survey manual:

https://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%209%20Manual%20for%20International%20Pelagic%20Surveys%20(IPS).pdf

3. For internationally coordinated surveys, describe the participating Member States/vessels.

Participants (countries/vessels) of this internationally coordinated survey include: IRL (RV "Celtic Explorer"), UK-SCO (RV "Scotia"), NOR (RV "Johan Hjort"), DNK (RV "Dana"), NLD (RV "Tridens"), DEU (FRV "Solea"). The survey is planned, coordinated and evaluated by the ICES Working Group of International Pelagic Surveys (ICES WGIPS).

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants (e.g. coverage of certain areas in a certain time frame) are allocated by WGIPS. Each participating country is responsible for the activities conducted on its national part of the international survey. A survey coordinator monitors and plans the individual national contributions.

Cost sharing: There is currently no cost sharing agreement in place for this survey.

Name of the research survey

Mackerel Egg Survey (triennial) (NSMEGS)

1. Objectives of the survey

The survey aims to estimate egg production and SSB for North Sea mackerel. The survey is conducted every third year, and the next survey is planned for 2022. Plankton sampling is performed to provided information on the distribution and abundance of mackerel eggs and some pelagic trawling is carried out for collecting adult female mackerel for fecundity estimates. The survey is carried out in May/June.

 2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

The survey design and sampling procedures are described in:
http://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%206%20-%20MEGS%20V1.3.pdf

and
http://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%205%20-%20WGMEGS%20V11%20Manual%20for%20AEPM%20and%20DEPM%20fecundity.pdf.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

DNK (RV "Dana")

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Not applicable - DNK only

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

North Sea Sandeels Survey (NSSS)

1. Objectives of the survey

The objective of the survey is to improve the scientific advice on sandeel. It provides the basis for setting a preliminary index for the sandeel fishery for the coming year. The data is used for calculating a 0-group abundance index, which is used in the stock assessment. The survey is carried out in November/December.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Storr-Paulsen, Marie; Degel, Henrik; van Deurs, Mikael; Olesen, Hans Jakob (2021): Sandeel survey 2020. Technical University of Denmark. Dataset. https://doi.org/10.11583/DTU.14798028.v1

Survey data and manuals from 2017 are open source and can be found via DTU.data or by using the link above.

The survey is conducted with chartered commercial vessels and the sampling of sandeels is conducted with a modified scallop dredge. Three replicates are taken at each station. The sandeels are sorted from the catches,

representative subsamples are measured and age samples are taken. Planning is done on a national level.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

DNK (RV "Dana")

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Not applicable - DNK only

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Sole Net Survey (SNS_NLD)

1. Objectives of the survey

The SNS is carried out annually in September. The Netherlands participates with RV Isis (10 days at sea) in the Dutch, German and Danish coastal zone. The SNS is a mandatory survey. The ICES Manual for the Inshore Beam Trawl Surveys (in prep., presumed finalisation Q2 2022) describes the current objectives:

   a. Create fisheries-independent abundance indices by age group (0-year-olds, 1-year olds, and older) for a number of fish species (plaice, sole, dab, flounder, turbot, brill) for the sampled area
   b. Collection of biological data on all fish species including elasmobranch species for ecosystem analysis purposes, including length measurements
   c. Collection of data on (a selection of) epibenthos species for ecosystem analysis purposes

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.
During daytime, 15-minute beam trawl hauls are conducted. Hydrographical data is collected with a datalog CTD attached to the net. The complete sampling procedure is defined in the ICES Manual for the Inshore Beam Trawl Surveys (in prep.), and is largely in line with the sampling procedures for the Beam Trawl Survey.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The survey is internationally coordinated by the ICES Working Group on Beam Trawl Surveys (WGBEAM). The Netherlands is the only MS conducting this survey.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
No task sharing applies (NLD only MS carrying out this survey). No cost sharing applies.

Name of the research survey

Nephrops UWTV (UWTV3-4)

1. Objectives of the survey

The purpose of the survey is to estimate the abundance of Nephrops in the Skagerrak and the Kattegat (Functional units 3 and 4). The survey is carried out in March/April.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

The survey design and method are described in the survey manual:

https://www.ices.dk/sites/pub/Publication%20Reports/Forms/DispForm.aspx?ID=37647

3. For internationally coordinated surveys, describe the participating Member States/vessels.
The survey is conducted by DNK and SWD reporting to ICES WGNEPS.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
 Cost sharing: There is currently no cost sharing agreement in place for this survey.

North Atlantic (ICES areas 5-14 and NAFO areas)

 Name of the research survey:

International Blue Whiting Spawning Survey (IBWSS)

 1. Objectives of the survey

- The primary aim of the International blue whiting spawning stock survey is to determine the age stratified abundance and distribution of blue whiting (*Micromesistius poutassou)* using acoustic survey techniques
- Collect hydrographic data by means of vertical CTD profiles
- Conduct directed trawl sampling using a pelagic trawl to determine the biological profile of target

species
- Conduct directed trawl sampling using a pelagic trawl to determine the species composition of mesopelagic fish echo traces
- Conduct visual abundance surveys of marine mammals and seabirds

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey (both Ireland and The Netherlands).

The Manual for International Pelagic Surveys (IPS) describes the methods used for survey design, analysis and reporting of survey data (SISP #9) and is described in detail in the latest IBWSS survey report (http://hdl.handle.net/10793/1689)

3. For internationally coordinated surveys, describe the participating Member States/vessels.

This survey acoustically measures the size of the spawning stock of blue whiting (Micromesistius poutassou) in western waters and is conducted by vessels from Ireland (RV *Celtic Explorer*), the Faroe Islands (RV *Jákup Sverri*), the Netherlands (RV *Tridens*), Norway (FV *Vendla*) and Spain (RV *Vizconde de Eza*).

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

A Danish scientist from DTU Aqua participates in the IBWSS each year on board the RV *Celtic Explorer* for the full duration of the survey (21 days).

A cost sharing agreement is in place, to reimburse Ireland and Netherlands for their ship time at the relative share of their TAC. Participating Member States for the blue whiting survey in 2023 are Denmark, Germany, Netherlands, Ireland, France and Sweden. Spain will provide ship time on its own vessel (see Table 1.3 for details).

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Biomass of Anchovy (BIOMAN)

1. Objectives of the survey
- To estimate annually the total biomass of anchovy and sardine in the Bay of Biscay applying the DEPM, this implies to estimate all the parameters to apply the DEPM. To estimate the age structure of these populations (biomass by age, numbers by age, percentage by age, weight by age and length by age) and the spatial distribution of the species. The anchovy estimates in 8abcd are used for the assessment and posterior management of the stock. For sardine, biomass estimates in 8abd have to be incorporated in the assessment in the next benchmark.
- To obtain daily egg production for sardine in 8abd. These estimates are used for survey trends-based assessment of the stock.
- Biological characterization of the species, spawning area delimitation of anchovy and sardine in the Bay of Biscay.
- Hydrological conditions of the prospective area.
- To obtain the anchovy and sardine egg abundances at 3m depth with CUFES
- To obtain the distribution and abundance of zooplankton in the Bay of Biscay

- To obtain the distribution and abundances of marine mammals, sea birds, marine debris and human activities.
- To obtain the distribution and abundance of micro, meso and macro plastics
- Collection of water samples on the surface and at different depths in stations spread over the sampling area for eDNA analysis

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

 The DEPM is applying following the protocol accorded at WGACEGG. In (ICES -Cooperative Research Report 332). https://ices-library.figshare.com/articles/report/Pelagic_survey_series_for_sardine_and_anchovy_in_ICES_subareas_8_and _9_Towards_an_ecosyste m_approach/18624050

Coverage: southeast of the Bay of Biscay (anchovy and sardine main spawning area).

Sampling strategy: adaptive. The survey starts from the West, looking for the western limit of the spawning, and continues to the north until the limit of the 8a.

Plankton sampling: Stations are located at intervals of 3 nmi along 15 nmi apart transects, perpendicular to the coast. At each station a vertical plankton haul is performed using a PairoVET net. The Continuous Underway Fish Egg Sampler (CUFES, Checkley et al., 1997) is used for adaptive decisions in order to delimit the spawning area of the species and to modify the intensity of the PairoVET sampling.

adult sampling: The adult samples are obtained, coinciding in space and time with the plankton sampling. When areas with anchovy or sardine eggs are encountered, the pelagic trawl is directed to those areas. In each haul, a sample of 2 kg of anchovy and/or sardine is randomly selected. 100 individuals of each species are measured and a biological sampling (60 - 120 individuals) is conducted. Length, weight, sex, maturity and extraction of otolith are measured for each individual.

hydrographic sampling: Sample depth, temperature, salinity and fluorescence profiles are obtained at each sampling station using a CTD coupled to the PairoVET

3. For internationally coordinated surveys, describe the participating Member States/vessels.
 Spain & Portugal/Vizconde de Eza for plankton sampling. Spain/ Miguel Oliver&Emma Badán, Portugal/Vizconde de Eza for adults sampling WGACEGG: Working Group on Acoustic and Egg Surveys for small pelagic fish in NE Atlantic

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Not applicable - ESP only

Name of the research survey

Celtic Sea Herring Acoustic Survey (CSHAS)

1. Objectives of the survey
- The primary aim of the CSHAS_IRL is to determine the age stratified abundance and distribution of herring (Clupea harengus) and sprat (Sprattus sprattus) using acoustic survey techniques
- Collect biological samples from directed trawling on insonified fish echotraces to determine age

structure and maturity state of the herring stock
- Determine estimates of biomass and abundance for sprat within the survey area
- Collect physical oceanography data from vertical profiles from a deployed sensor array
- Conduct visual abundance surveys of marine mammals and seabirds

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

The Manual for International Pelagic Surveys (IPS) describes the methods used for survey design, analysis and reporting of survey data (SISP #9) and is described in detail in the latest CSHAS survey report (http://hdl.handle.net/10793/1664).

3. For internationally coordinated surveys, describe the participating Member States/vessels.
 Not applicable – IRL only

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Not applicable - IRL only

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Acoustic Survey on Sardine and Anchovy (ECOCADIZ_ESP)

1. Objectives of the survey
- To estimate by hydroacoustics (echo-integration) and to map the abundance and biomass of the main neritic pelagic species inhabiting the Gulf of Cadiz shelf waters, especially the Gulf of Cadiz anchovy spawning stock.
- To determine the distribution area and density of the main fish species.
- To characterize the biology of the above species in relation to their main habitats, especially according to the size composition and/or age structure, and to the maturity, repletion and condition stages.
- To estimate the relative abundance and to map the distribution area of anchovy eggs by means of CUFES.
- To map the distribution and abundance of the apical predators within the surveyed pelagic community and their relation to oceanographic and biological factors.
- To oceanographically characterize the surveyed area.
- To map the distribution area and density of floating macro-litter and micro-plastics.
- To collect anchovy "extra" samples for the estimation of the adults' parameters needed to triennially apply the Daily Egg Production Method to Gulf of Cadiz anchovy.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Manual for Acoustic Surveys Coordinated under ICES Working Group on Acoustic and Egg Surveys for Small

Pelagic Fish (WGACEGG)

https://www.ices.dk/sites/pub/Publication%20Reports/Techniques%20in%20Marine%20Environmental%20Sciences%20(TIMES)/TIMES64.pdf

Acoustic estimation of the abundance and biomass of the survey target species during daylight, along to a systematic grid composed by (21) transects, between 20 – 200 m isobaths, 8 nm-equally spaced and normal to the shoreline, with a Simrad™ EK-60 scientific echo-sounder working in a multi-frequency fashion (18, 38, 120 and 200 kHz; ICES CRR 332, Massé et al., 2018; ICES, 2021). The echo-traces identification, size, age composition and other biological aspects of the assessed species are obtained from the results from opportunistic ground-truthing fishing hauls. Backscattering energy attributed to fish species after scrutinisation of the echograms. Biomass estimates using echo-integration method. Hydrographic characterization of the surveyed area is carried out by night through the sampling of a systematic grid of discrete CTD (with coupled multi-sensors)-LADCP casts and along-transect sub- superficial continuous sampling with VMADCP and ThermoSal-F. The climatic characterization of the surveyed area is obtained from the analysis of continuous records of weather variables by an Aanderaa weather station. The ichthyoplankton (anchovy eggs) distribution and sub-superficial density is recorded by a Continuous Underway Fish Egg Sampler (CUFES) along transects during the acoustic sampling. Information on the distribution and abundance of apical predators and floating macro-litter is collated by direct observation. Sub-superficial density of micro-plastics is opportunistically sampled with Manta Trawl hauls.

3. For internationally coordinated surveys, describe the participating Member States/vessels.
Spain/ RV.Miguel Oliver.
WGACEGG: Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas 7, 8 and 9

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Not applicable - ESP only

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Greenland Groundfish Survey (GGS)

1. Objectives of the survey

The objective is to obtain data for the assessment of cod, demersal redfish and other demersal species off Greenland.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Demersal trawling, plankton sampling and CTD casts for physical oceanographic measurements along standard transects are carried out. The survey started in 1982 and was primarily designed for the assessment of cod and redfish, but covers the entire groundfish fauna down to 400 m depth. It is carried out annually during the 4th quarter (June/July from 2023 onwards) and provides the only fishery-independent information about the abundance & biomass of groundfish off Greenland (ICES Div. 14b and NAFO Div. 1B- 1F). Designed as a stratified random survey, the hauls are allocated to 14 strata (7 geographic areas

* 2 depth strata, 0-200m, 201-400m) off West and East Greenland. The fishing gear used is a standardised 140-feet bottom trawl. Biological data from the catches (length distributions for all species, individual weights, gonad and liver weights as well as age, sex and maturity for the commercial species) are collected, population data raised to the total surveyed area and submitted to the ICES North-Western Working Group (NWWG) and NAFO Scientific Council and used in the respective stock assessments. In addition, hydrographic (CTD) and weather data are collected. The survey was carried out every October/November on FRV "Walther Herwig III". In 2023, the survey timing will be changed from autumn to summer. This decision was taken due to continuously poor weather conditions in autumn resulting in missing coverage. This is in agreement with the Greenland Institute of Natural Resources and was discussed in ICES NWWG.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The survey is regularly evaluated through ICES NWWG. DEU is the only EU Member State to undertake this survey. The current vessel used for the survey is FRV Walther Herwig III.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Greenland conducts a parallel summer survey with its own vessel. Data from the two surveys are combined in the assessment.

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Irish Anglerfish and Megrim Survey (IAMS_IRL)

1. Objectives of the survey

The main objective of the survey is to obtain biomass and abundance indices for anglerfish (Lophius piscatorius and L. budegassa) and megrim (Lepidorhombus whiffiagonis and L. boscii) in areas 6a (south of 58°N) and 7 (west of 8°W). Secondary objectives are to collect data on the distribution, relative abundance and biology of other commercial demersal species (cod, haddock, ling, plaice, sole, pollack, saithe, whiting, brill, hake, john dory, lemon sole, turbot, brill, blonde ray, cuckoo ray, common skate/flapper skate, spotted ray, thornback ray, spurdog, Nephrops). Occurrence of vulnerable or sentinel invertebrate species such as corals, sea pen, fan mussel and ocean quahog is also noted. Litter is also sorted and recorded.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Stations are randomly selected within a stratified survey area based on depth and commercial catch rates of the target species. Fishing is conducted using a Jackson trawl with 5.45m2 Thyboron Type 16 otter doors, 16" hoppers, 19mm tickler chain and 100mm cod end mesh. The gear is trawled at 3kn for one hour at each station. The warp to depth ratio is 3:1 for depths up to 200m, and 2:1 plus 200m in deeper water. All fish and invertebrate species are sorted and weighed. Biological

data are collected for selected commercial demersal species such as Cod, Haddock and Whiting etc. Occurrence of vulnerable or sentinel invertebrate species such as corals, sea pen, fan mussel and ocean quahog is also noted. Litter is also sorted and recorded. Oceanographic data are collected from CTD instrument on trawl door and occasional surface to sea bed CTD transects. Sediment grabs are carried out opportunistically using Day grab.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

Irish Anglerfish and Megrim Survey is carried out in informal collaboration with Marine Scotland's Scottish Anglerfish and Megrim Survey (SIAMISS) and uses the same gear and fishing practices.
IAMS is limited to south of 58° North while SIAMISS extends north of this line. Survey data are shared between Ireland and Scotland for the purpose of stock assessment and advice at ICES Working Group for the Celtic Seas Ecoregion (WGCSE) and Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE).

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Not applicable - IRL only

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Western IBTS 4ᵗʰ Quarter (IBTS_Q4) including porcupine survey

1. Objectives of the survey

The main objective of the IBTS_Q4 is to collect data on the distribution, relative abundance and biological parameters of commercial commercially exploited demersal species. The indices currently utilised by assessment WG's are for haddock, whiting, plaice, cod, hake and sole. Survey data is also provided for white & black anglerfish, megrim, pollack, ling, blue whiting and a number of elasmobranchs as well as several pelagics (herring, horse mackerel and mackerel). Occurrence of vulnerable or sentinel invertebrate species such as corals, sea pen, fan mussel and ocean quahog is also noted. Marine litter is also sorted and recorded. Oceanographic data are collected from CTD instrument on trawl door and occasional surface to sea bed CTD transects. Sediment grabs are carried out opportunistically using a Day grab.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Stations for the **Irish** survey are randomly selected within a stratified survey area in 6a south, 7b & 7g-j north based on depth and historic analysis of survey catch distribution rates. Fishing is conducted using a GOV 36/47 trawl (20mm liner) with 5.3m2 (1450 Kg) Morgere otter doors, 16" hoppers (D-gear) in area 6a and 8" disks (A- gear) areas 7b, g and j. The gear is trawled at 4kn for 30min at each station. Sweeps are 55m up to 80m depth, extended to 110m in deeper water to minimise variable trawl geometry.

The **Portuguese** surveys cover 9a area in Portuguese waters. The surveyed area extends from latitude 41°20' N to 36°30' N, and from 20 to 500 m depth. The surveys were carried out with the R/V "Mário Ruivo", a

multipurpose oceanographic vessel, with 76 m. The used fishing gear is a bottom trawl (type Norwegian Campell Trawl 1800/96 NCT) with a 20 mm codend mesh size. The mean vertical opening is 4.6 m and the mean horizontal opening between wings and doors is 15.1 m and 45.7 m, respectively. The polyvalent trawl doors are rectangular (954 mm x 535 mm) with an area of 1.75 m2 and weighting 500 Kg.

The **French** survey samples ICES area 7d annually during 30 days in October following a fixed sampling design with about 88 trawling stations. The survey follows the standard protocol[1] and uses the standard bottom trawl "gear A" (GOV 36/47) to conduct 30min tows during daylight.

The **Spanish** survey samples ICES area 8c y 9a north, 9a south and 7ck.

IBTS SISP 15 manual:

https://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%2015%20NeAtl%20IBTS%20Survey.pdf

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The survey is also formally coordinated under WGBITS and is carried out in formal collaboration with the other IBTS surveys in the area run by Spain, France, Ireland and Portugal.
Ireland R/V Celtic Explorer, Portugal R/V Mário Ruivo, France R/V Thalassa, Spain R/V Miguel Oliver

Relevant international planning group: IBTSWG-International Bottom Trawl survey Working Group of ICES

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Cost sharing: There is currently no cost sharing agreement in place for this survey.

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Acoustic Survey for Juvenile Anchovy in the Bay of Biscay (JUVENA_ESP)

1. Objectives of the survey
The main objective of the project is estimating the abundance of juvenile anchovy in the Bay of Biscay in Autumn, as a tool for predicting the recruitment of anchovy. Secondary objectives are:
- Studying the biological condition of juvenile anchovy and its influence on the recruitment process.
- Characterising the hydrographic conditions and the abundance and distribution of the components of the pelagic ecosystem relevance to understand the dynamics of the recruitment.
- Studying the interactions between top predators and their preys in the Bay of Biscay, as well as inter-specific interactions between marine birds and sub-superficial predators.
- Acoustic identification and vertical distribution of mesopelagic species in the Bay of Biscay.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Manual for Acoustic Surveys Coordinated under ICES Working Group on Acoustic and Egg Surveys for Small Pelagic Fish (WGACEGG)
https://ices-library.figshare.com/articles/report/Pelagic_survey_series_for_sardine_and_anchovy_in_ICES_subareas_8_and_9_Towards_an_ecosystem_approach/18624050

The methodology used to estimate the abundance of juvenile anchovy is the acoustic-trawl methodology. Acoustic data processing is performed by layer echo-integration. The identification and sizing is obtained by pelagic fishing hauls. The hauls are grouped by strata of homogeneous species and size composition. Inside each of these homogeneous strata, the echo-integrated acoustic backscattering is assigned to species according to the composition of the hauls. Afterwards, the energy corresponding to each species-size is converted to biomass using their corresponding conversion factor. Details of the methodology of the JUVENA surveys were described in "Boyra, G., Martınez, U., Cotano, U., Santos, M., Irigoien, X., and Uriarte, A. 2013. Acoustic surveys for juvenile anchovy in the Bay of Biscay: abundance estimate as an indicator of the next year's recruitment and spatial distribution patterns. ICES Journal of Marine Science, 70: 1354–1368."

3. For internationally coordinated surveys, describe the participating Member States/vessels.
Spain: RV. Angeles Alvariño, RV. Enma Bardan
WGACEGG: Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas 7, 8 and 9

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
Not applicable - ESP only

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

International Mackerel and Horse Mackerel Egg Survey (MEGS)

1. Objectives of the survey

The main objective of the survey is to extract, identify and stage the development of mackerel and horse mackerel eggs collected from plankton samples. Samples are collected every ICES half statistical rectangle. A CTD is attached to the plankton sampler and information on temperature, salinity and sample depth is collected at each station. Gonad samples are also collected from female fish which are analysed for fecundity, batch fecundity, atresia and POF stage. These data are used to provide WGWIDE, the assessment group for widely distributed pelagic fish, with a spawning stock biomass, SSB, estimate for mackerel, and an egg production estimate for horse mackerel.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

The survey protocols have been published by ICES and can be accessed at
https://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%205%20-%20WGMEGS%20Manual%20for%20AEPM%20and%20DEPM.pdf
and
 https://www.ice_s.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%206%20-%20MEGS%20V1.3.pdf

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The survey is coordinated by ICES WGMEGS

Ireland – RV Celtic Explorer
Portugal – Vizconde de Eza
Spain - Vizconde de Eza & Ramon Margalef
Germany – Walther Herwig III
Netherlands - Tridens
Denmark - Dana

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Task sharing applies. The MEGS is carried out by five EU MSs and three non-EU countries, each contributing with its own vessel. Fecundity and atresia samples are divided among the three analysing EU countries (Ireland, Netherlands, Spain), UK and Norway. No cost sharing applies.

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Nephrops Survey Offshore Portugal (FU28 – 29) NepS

1. Objectives of the survey

- To estimate the relative abundance of the target species, *Nephrops* norvegicus for use in the assessment and advice process, to study their geographical distribution in space and time and to collect data for the determination of biological parameters (sex-ratio, length-weight relationships, maturity);
- To monitor the distribution and relative abundance of the secondary crustacean species (deep water rose shrimp, *Parapeaneus longirostris*), accompanying fish and invertebrate species;
- To collect data for the determination of biological parameters for selected species;
- To collect data for biodiversity studies and information on marine litter distribution to comply with MSFD requirements;
- To collect hydrographical and environmental parameters (e.g. temperature, salinity, turbidity, oxygen, etc.);
- To collect sediment data to improve the definition of *Nephrops* habitat.
- Data collected in this survey is an input for several MSFD descriptors.

The survey is annual, and the time period is June-July.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

In 2005, a sampling grid was designed to cover the main crustacean fishing grounds within the range of 200 – 750 m, replacing the previous stratification. The substrate in these grounds is characterized by muddy sediments composed by different percentages of silt and clay.

Each rectangle has 6.6 minutes of latitude x 5.5 minutes of longitude for the SW coast and vice-versa for the south coast, corresponding approx. to 33 nm2. The abundance observed at a particular point within the rectangle will reflect the relative abundance of the resource at that geographical area and it is assigned to the centre of the rectangle. The stations may be grouped a posteriori in the strata used previously and the results compared with the former surveys.

The grid has been updated to include areas where fishing is known to occur and to exclude others where the target species do not occur or non-trawlable areas, based on the definition of the fishing grounds through VMS fishing records. The new grid is composed by 80 rectangles in total, with 22 in FU 28 and 58 in FU29.

Since 2021, the survey is conducted with the R/V "Mário Ruivo", a 76 m multipurpose oceanographic vessel fishing with a crustacean trawl with a 20 mm cod-end mesh size. The haul standard duration is 30 minutes. Hauls with duration lower than 15 minutes are not considered valid. Hauls are carried during daylight at a mean speed of 2.8-3.0 knots. Sensors are used to monitor the trawl net parameters (wings/doors spread, horizontal and vertical openings, depth).

Figure 2.6d shows the grid overlaying the fishing grounds, highlighting the changes.

In each station, whenever possible, the entire catch is sorted, with fish and shellfish species identified to the lowest taxonomic level possible. In the case of a large catch of one dominant species, or larger catches in which a small number of species are sufficiently abundant, these can be subsampled, appropriately, with the rest of the catch fully examined for 'rare' species and any exceptionally small or large individuals of the species that are subsampled.

Subsamples from selected species are taken to collect biological data for each individual (i.e. sex, length, weight, maturity stage). Hard structures (otoliths and illicia) are also collected for some fish species for growth studies.

At the end of each haul, a CTD station is performed to collect data on physical parameters.

ICES. 2018. Annex 7: FUs 28 and 29 (Southwest and South Portugal) *Nephrops* offshore Survey (NepS). In Interim Report of the Working Group on *Nephrops* Surveys (WGNEPS). WGNEPS 2017 Report, 28 November – 1 December 2017. Heraklion, Greece. ICES CM 2017/SSGIEOM:19, 71 – 78.

Manual:

ICES manual for *Nephrops* surveys (Series of ICES Survey Protocols) being finalized by ICES WGNEPS

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The Working Group on *Nephrops* Surveys (WGNEPS) coordinates all trawl and underwater television (UWTV) surveys from the NE Atlantic Region, as well as some UWTV surveys in the Mediterranean, each conducted individually by one research institute in a Functional Unit.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Not Applicable – PRT only

Name of the research survey

Bay of Biscay Demersal Resources Survey (ORHAGO_Q4_FRA)

1. Objectives of the survey

The Bay of Biscay ORHAGO beam trawl survey aims to collect data on composition, distribution and change in relative abundance of benthic fish fauna on the continental shelf (<100m) on a yearly basis (quarter 4). Information are collected on length frequency for all the fish, with biological information (age, maturity) for some species. The main target species is sole, other abundant commercial species include (top 10 by decreasing numbers/hour in 2015): Norway lobster, hake, brown shrimp, cuttlefish, horse mackerel, common whelk, common spider crab, small-spotted catshark, greater weever and common prawn. Since 2013, the benthos is exhaustively sampled for all the hauls (for determination at the laboratory).

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

The ORHAGO survey was launched in 2007 to fulfil the need of a fishery independent abundance index for the Bay of Biscay sole stock which has been pointed out since many years by successive ICES WG and their review groups and as well as in ICES advice.

Since 2011, in accordance with ICES agreed gear for flatfish abundance surveys, the gear is 4m-beam trawl with chain mat, 50mm mesh in the net et 40 mm mesh in the cod-end.

The sampling plan was designed to ensure full coverage of the sole habitat in the Bay of Biscay during a period (November-December) for which fish behaviour and distribution was suitable for obtaining an unbiased abundance index (young fish move offshore when coastal waters become colder and before the concentrations of the spawning season). The sampling design is a systematic sampling with 49 reference stations. The design was validated in 2013 by the ICES WGBEAM working group.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The ORHAGO survey is coordinated by the ICES WGBEAM working group.

WGBEAM has approved the calculation method for the Bay of Biscay sole stock abundance index at its 2013 meeting (daylight hauls for a set of reference stations). The same year, an interim benchmark approved the inclusion of the ORHAGO survey in the Bay of Biscay sole stock assessment. Since 2013, the ORHAGO survey has consequently been used to assess the status of this stock (WGMMM in 2013, WGBIE since 2014).

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Not Applicable – FRA only

Name of the research survey

Deep-water Longline Survey (PALPRO_ESP)

1. Objectives of the survey

- To obtain data on biodiversity and biomass estimates.
- To obtain biological samples (tissues) of the most deep-water representative species.
- To test the suitability of the commercial longline fishing gear (for deep-water sharks) modified for scientific surveys.
- To test depth, salinity and temperature sensors adapted to deep for monitoring the fishing gear.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

The methodology is published in the report of WGDEEP 2016 and in this link

https://www.azti.es/en/proyectos/deep-sea-longline-campaign-estimate-abundance-of-sharks/

A modified commercial deep-water fishing gear adapted was used for the survey. The fishing gear is a two equal horizontal line sections of 1750 m +1750 m, each with 150 hooks (300 in total). Each hook was baited with 1/3 of mackerel.

The horizontal line was attached to the bottom with 1.5 kg stone each five hooks. To improve the catch efficiency of species that feed above the bottom, the stones of the horizontal line were removed in two "floating" sections of 75 + 75 hooks allowing these sections to get more buoyancy. The fishing gear was linked to the surface by two vertical lines and two buoys placed at the beginning and end of the horizontal line.

For the continuous recording of depth, temperature and salinity the long line was monitored with five small sensors DST centi and DST CTD able to withstand 2500 m depth. The survey area was 10.5 km north of the Cape Matxitxako (VIIIc east) in a narrow canyon of about 28 km length that decreases progressively in depth from 500 to 2.500 m.

The average duration of the haul was 7:30 hours. For the calculation of the fishing effort several categories of the hook status were recorded.

Null	(N)	Lost of bait during the hauling
Entire	(E)	Hook with bait
Eaten	(C)	with bait partially eaten
Broken	(R)	Tangled-broken hook
Empty	(V)	Empty (no catch, no bait)
With catch	(P)	with catch

The specimens were identified, measured (cm), weighted (g) and sexed on board.

For the analysis of effort and CPUEs hauls' catches were grouped in four depth strata: 650-1050 m, 1051-1450 m, 1451-1850 m and 1851- 2250 m.

The Effort in each stratum (EFFORTst) was estimated as the number of hooks able to fish during the haul (P + E + C) divided by the total of hooks and multiplied by the soak time (minutes):

EFFORTst: ((P + E + C) / total hooks) x min

The Catch per Unit of Effort of each stratum (CPUEs) was calculated as the catch (kg) divided by the EFFORTst: CPUEst = kg / EFFORTst

3. For internationally coordinated surveys, describe the participating Member States/vessels.
It is not an International coordinated survey

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Not Applicable – ESP only

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

International Redfish Trawl and Acoustic Survey (REDTAS)

1. Objectives of the survey

This survey is part of a coordinated effort of ICES to undertake an International Deep Pelagic Ecosystem Survey in the Irminger Sea and adjacent waters in June/July, estimating the abundance and biomass of the pelagic beaked redfish (*Sebastes mentella*) stocks and conducting additional observations relevant to integrated ecosystem assessment in the area. The survey is conducted triennially in June-July.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.
The international trawl/acoustic survey on pelagic redfish in the Irminger Sea and adjacent waters in June/July is carried out by two vessels from Germany and Russia. In the depth zone that can be surveyed by hydroacoustic measurements, i.e. shallower than the deep-scattering layer (DSL; down to about 350 m), hydroacoustic measurements and identification trawls are carried out. Within and below the DSL (down to about 500 m), redfish abundance is estimated by trawls. At depths below 500 m, redfish abundance is estimated by trawls at three depths layers (headline: 550 m, 700 m and 850 m). Biological samples are collected from the redfish caught in the pelagic trawls and hydrographical measurements are taken on regular stations on the survey tracks. For details, see: http://www.ices.dk/community/groups/Pages/WGIDEEPS.aspx

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The survey takes place every three years and is scheduled to be a joint survey by Germany with the FRV

"Walther Herwig III" and by Russia (RV "Vilnyus") and usually Iceland (no participation in 2021).

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied. Individual tasks to the survey participants (e.g. coverage of certain areas in a certain time frame) are allocated by WGIDEEPS. Each participating country is responsible for the activities conducted on its national part of the international survey.

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Sardine, Anchovy, Horse Mackerel Acoustic Survey (SAHMAS)

1. Objectives of the survey
The spring acoustic survey SAHMAS includes the PELAGO survey carried by Portugal, the PELACUS survey carried out by Spain and the PELGAS survey carried out by France.

The PELGAS survey is the French contribution to the international Sardine, anchovy, horse mackerel acoustic survey (SAHMAS) in the Bay of Biscay. The survey aims at monitoring the Bay of Biscay pelagic ecosystem, in order to provide scientific data for implementing an ecosystem-based management of Biscay living resources. The spatial and temporal dynamics of small pelagic fish populations are specifically monitored, with focus on anchovy and sardine. The survey takes place in spring (April-May), during anchovy and sardine spawning, to allow for the assessment of both eggs and adult stages. Anchovy, sardine, horse mackerels, sprat, boarfish, blue whiting and mackerel biomass estimates and information on population structure (length and age structure for anchovy and sardine, length structure for other species…) are derived from the survey data. Anchovy and sardine eggs distribution and abundance, as well as hydrological conditions are also assessed during the survey.

The PELACUS survey is the Spanish contribution to the SAHMAS survey. The main objective of this survey is to achieve a biomass' estimation by echo integration of the main pelagic fish distributed in the Spanish Cantabrian and NW waters (sardine, anchovy, horse mackerel, mackerel, blue whiting, bogue, boar fish, and chub mackerel).

The PELAGO survey is coordinated within ICES - WGACEGG (Working Group on Acoustics and Egg Surveys for small pelagic fish in NE Atlantic) which also coordinates another Spring acoustic survey in the same region - North-East Atlantic (WESPAS survey from Ireland). PELAGO takes place each year during spring covering the shelf waters of Portugal and the Cadiz Bay. The main objectives include monitoring the abundance distribution through echo-integration and the study of several biological parameters of the following species: Main target species: Sardine Sardina pilchardus and Anchovy Engraulis encrasicolus, Secondary target species: Horse mackerel Trachurus trachurus, Atlantic chub mackerel Scomber colias, Blue whiting Micromesistius poutassou, Mackerel Scomber scombrus, Mediterranean horse mackerel Trachurus mediterraneus, Blue jack mackerel Trachurus picturatus, Boarfish Capros aper and other small pelagic fish. This survey provides abundance at age estimates for the stock assessment of sardine and anchovy.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Methods have been validated by WGACEGG and are described in details in the survey protocols manual: https://doi.org/10.17895/ices.pub.7462

Multibeam and multifrequency echosounders provide real time information on the spatial patterns and abundance of small pelagic fish. Simultaneously, a Continuous Fish Eggs Sampler (CUFES) provide complementary information on anchovy and sardine eggs. The presence and abundance of seabirds and marine mammals are also continuously recorded along transects during daytime. The species composition of fish school echoes are identified by midwater trawling, performed in an adaptative manner. CTD stations and zooplankton net casts are performed at night to characterize the small pelagic fish biotic and abiotic environment.

CUFES samples are processed onboard using the Zoocam egg and mesozooplankton scanner system, which allows for the semi-automatic identification and counting of anchovy and sardine eggs. Fish biological samples are recorded and analysed at sea, including anchovy and sardine age readings. Acoustic and fishing data are combined using the EchoR R package, to derive small pelagic fish biomass estimates and distribution maps.

Acoustic and fishing data, as well as biomass assessment results are stored in the EchoBase relational database. Acoustic and fishing data are shared within the ICES ACEGG working group. They are being stored in the ICES dedicated database: https://www.ices.dk/data/data-portals/Pages/acoustic.aspx.

Anchovy, sardine, mackerels, horse mackerels, blue whiting and boarfish biomass estimates derived from data collected during PELGAS are provided to ICES stock assessment groups (WGHANSA and WGWIDE).

3. For internationally coordinated surveys, describe the participating Member States/vessels.

The survey is internationally coordinated within the ICES Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas 7, 8 and 9 (WGACEGG), comprising scientists from Spain, Portugal, France, United Kingdom and Ireland.

France R/V Thalassa
Spain R/V Miguel Oliver
Portugal R/V Mário Ruivo

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants are allocated by the responsible ICES survey planning group. Each participating country is responsible for the activities conducted on its national part of the international survey. Cost sharing: There is currently no cost sharing agreement in place for this survey.

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Sardine DEPM triennial (SDEPM)

1. Objectives of the survey

Estimate the spawning stock biomass (SSB) of the Atlanto-Iberian sardine stock (ICES 9a plus 8c- Spain), using the Daily Egg Production Method (DEPM).

The SDEPM survey involves vertical ichthyoplankton sampling on fixed stations with a CalVET net. Simultaneously, the auxiliary CUFES system operates underway (between the CalVET stations), collecting surface plankton samples (3m below surface approximately) every 3 nm. The deployment of both samplers follows a predefined grid of fixed transects perpendicular to the coast and spaced 8 nm, covering the platform at least until the 200 m isobath. Decisions on the offshore limit of surveying (delimitation of the spawning area) are made, adaptively, depending on the egg results provided by the samples obtained by the CUFES system. After hauling, ichthyoplankton samples are preserved and subsequently processed and analysed in laboratory. Concurrently to the plankton sampling with the CalVET and the CUFES, environmental data (temperature and salinity and fluorescence) are recorded. The ichthyoplankton samples are then used in view of:

- Quantifying and identifying per developmental stage sardine eggs observed over the whole surveyed area;
- Delimiting and estimating the spawning area of sardine;
- Estimating sardine daily egg production.

Simultaneously with the ichthyoplankton sampling, fishing hauls are conducted by pelagic or bottom trawling, opportunistically, following the information provided by the RV echo-sounder. Their number and spatial distribution aim at ensuring a good and homogeneous coverage of the survey area and an adequate representation of the population demography and distribution. Samples collected by the RV are often complemented with samples obtained from the commercial purse-seine fleet at the main landing harbours, during the period of the survey. Immediately after trawling, sardine fish samples are processed onboard the RV, individual biological information is recorded, and biological material is collected and preserved for subsequent histological processing in laboratory.

The data and material collected are used to estimate adult parameters (sex ratio, mean female weight, mean batch fecundity and spawning fraction) within the mature component of the population, and subsequently calculate sardine daily fecundity.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Manual:

DEPM PIL survey is coordinated by ICES WGACEGG

(http://www.ices.dk/community/groups/Pages/WGACEGG.aspx).

ICES manual for DEPM survey (Series of ICES Survey Protocols) being finalized by ICES WGACEGG.

3. For internationally coordinated surveys, describe the participating Member States/vessels.
- Spain/ RV.Vizconde de Eza, RV. Miguel Oliver (Adult sampling); (27.9aN and 8c)
- Portugal/RV Vizconde de Eza (27.9a S and W)

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Sardine DEPM survey is coordinated internationally under the auspices of the ICES WGACEGG; Portuguese survey carried out jointly with the Spanish survey (from the Instituto Español de Oceanografía, IEO) in order to cover the Atlanto-Iberian sardine stock area (9a, 8c).

Individual tasks to the survey participants are allocated by the responsible ICES survey planning group. Each participating country is responsible for the activities conducted on its national part of the international survey.

General Comment: This Text box fulfils Article 5 (1)(b), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision. It is intended to specify which research surveys at sea set out in Table 2 of the EU MAP Implementing Decision will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU-MAP Implementing Decision or whether it is an additional survey.

Name of the research survey

Nephrops UWTV Surveys (UWTV 16-17, UWTV 19, UWTV 20-22)

Three UWTV surveys in any one year but they are described here as one as the areas surveyed can interchange during the survey periods depending on weather conditions.

1. Objectives of the survey
The main objective of the Irish *Nephrops* Underwater TV surveys is to obtain quality assured estimates of *Nephrops* burrow densities for the following Functional Units (FU): 16-17, 19, 20-22. Occurrence of vulnerable or sentinel invertebrate species such as soft corals, and sea pens is also noted. Litter is recorded.

2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Stations are randomly selected within a stratified survey area sufficient to cover adequately the known spatial and bathymetric distributions for each stock and ensure a CV of less than 20% for the total abundance estimate as recommended by SGNEPS. This data is submitted to WGCSE on an annual basis to contribute to stock assessment and management advice and also to WGNEPS annually, for survey coordination and quality control purposes.

At each station the UWTV sledge is deployed to capture time referenced high-definition image data with field of view or 'FOV' of 1.03 metre. Vessel position (DGPS), depth and position of sledge using a USBL transponder are recorded every 3 seconds. Occurrence of vulnerable or sentinel invertebrate species such as corals and seapen is also noted. Litter is recorded. Oceanographic data are collected from a sledge mounted CTD instrument. Sediment grabs are carried out opportunistically using Day grab.

When time allows beam trawling is carried out to opportunistically sample *Nephrops* and macro benthos, where the aim is to carry out approximately 7 beam trawls randomly on FU 17 and FU 22 only.

Sampling design description: Individual video transects are the Primary sample Unit (PSU), these are selected from random locations inside each stratum. Each transect is then processed according to the ICES Manual for *Nephrops* Underwater TV Surveys TIMES 65 manual https://doi.org/10.17895/ices.pub.8014.

3. For internationally coordinated surveys, describe the participating Member States/vessels.
Ireland RV Tom Crean

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Not applicable – IRL only

Name of the research survey

Nephrops UWTV Surveys (UWTV 30)

Name of the research survey: ISUNEPCA

1. Objectives of the survey
   - To obtain estimates of Nephrops burrows densities in the Gulf of Cádiz from a randomized isometric grid of UWTV stations spacing 4 nautical miles using the underwater images.
   - To define the Nephrops distribution in the Gulf of Cadiz
   - To obtain density estimates of bentho-demersal macrofauna species and the occurrence of trawl marks on the sea bed
   - To calibrate bentho-demersal macrofauna observed in the underwater videos and those obtained in the beam trawl.
   - To measure oceanographic variables using a sledge mounted CTD
2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

Manual for Nephrops Underwater TV Surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS)

https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20(CRR)/CRR340.pdf

The UWTV survey design follows a randomized isometric grid of stations at 4 nm spacing. The stations ranged from 130-650 m depth with an average depth around 410 m. Additionally, stations located on the shallower edge of the study area are considered in order to verify the boundary of the Nephrops distribution. The sledge, once stable on the seabed, is towed at between 0.6-0.7 knots in order to obtain the best possible conditions for counting burrows and 10 good minutes are recorded. This time corresponds to 200 m swept, approximately. HiPAP transponder on the sledge is used to obtain the sledge position. The distance over ground estimate (DOG) is calculated using the sledge position and the field of view of the video footage is 75 cm (FOV), which was confirmed using line lasers.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

Relevant international planning group: WGNEPS_ICES Working Group of Nephrops Surveys.

UK-Scotland/Scotia; UK/Endeavour; AFBI/Corystes; Ireland/Tom Crean; France/ Tom Crean; Denmark/Havfisken; Sweden/Asterix; Spain/Ángeles Alvariño, Ramón Margalef

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

Individual tasks to the survey participants are allocated by the responsible ICES survey planning group. Each participating country is responsible for the activities conducted on its national part of the international survey. Cost sharing: There is currently no cost sharing agreement in place for this survey.

Text Box 3.1: Fishing activity variables data collection strategy

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General comment: This text box fulfils Article 5 (2)(c), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 3.1 of the EU MAP Delegated Decision annex. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under the Control Regulation (EC) No 1224/2009 or where data collected under Regulation (EC) No 1224/2009 are not at the right aggregation level for the intended scientific use. Text Box 3.1 should be filled only in case complementary data collection is planned

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Small Scale Fisheries (SSF) data models for RDBES

ICES WGCATCH is discussing the development of RDBES database for the proper integration of SSF data and their specificities into the RDBES. In 2021 based on the changes suggested by this ICES group and also agreed by the ISSG SSF, were implemented in the RDBES CE and CL formats. In 2022 WGCATCH recommended the introduction of a new table that describes the number of active and inactive vessels (capacity table) by vessel length class to better describe the fleet. In addition, such a table could feed into the capacity table of the FDI data call. Furthermore, WGCATCH has developed a risk assessment data quality methodology to assess the potential risk of data incompleteness issue especially focused of fishing activity data collected by a census approach and such table constitute a first step to implement it (ICES 2023).

[Note] *These improvements will be revised and tested by the ISSG SSF during 2023. In this way, all Member States will be able to upload all SSF information following the data formats agreed for the RDBES. This would allow to improve the knowledge of the activity of these SSFs, but also to be able to analyse in some way the quality of the data incorporated into the RDBES at regional level. This information is essential to improve both national and regional sampling for these fisheries.*

Transversal variables for all fisheries
[Note] *ISSG on Metier assignment and Transversal variables (effort estimates) inputs here expected by June 2023 in the RCG Technical Meetings.*

Text Box 3.2: Fishing activity variables data collection strategy (for inland eel commercial fisheries)

General comment: This text box fulfils Article 5(2)(c), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 3.2 of the EU MAP Delegated Decision annex. It is intended to describe the methods and data sources used to estimate fishing capacity, effort and landings data.

No information

Text Box 4.2: Incidental catches of sensitive species

General Comment: This text box fulfils Article 5(2)(a) and (b), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter 2 point 4.1 of the EU-MAP Delegated Decision annex. This text box complements Table 2.5.

No information

Text Box 4.3: Fisheries impact on marine habitats

General comment: This text box fulfils Article 5 paragraph 2(a) and 2(b), Article 6 paragraph 3(a), 3(b) and 3(c) of Regulation (EU) 2017/1004 and Chapter 2, section 4.2 of the EU MAP Delegated Decision annex. It contains information on additional studies on the fisheries impact on marine habitats. This text box applies to the work plan and the annual report.

1. Aim of the study

Fundamental changes in the importance of natural versus fishing induced mortality have been observed in the North Atlantic while moving towards maximum sustainable yield (MSY) management targets. The reduction of fishing mortality in combination with successive recovery of fish stocks, especially of some larger predatory species, led to an increasing natural mortality as opposed to fishing mortality. Consequently, estimates of natural mortality have become more important for stock assessments and forecasts. In general, information on prey availability, competition and predation processes in fish stomachs are needed to support several policies (e.g., Common Fisheries Policy (CFP), EU Marine Strategy Framework Directive (MSFD)) that envisage an Ecosystem Approach to Fisheries (EAF) and an Ecosystem Based Fisheries Management (EBFM).

The main objective of the North Sea regionally Coordinated Stomach Sampling programme is to propose a full set up covering on-board sampling, stomachs analyses in laboratory, data storage and report – in European waters, starting with the North Sea, Skagerrak and Kattegat as a case study and using IBTS Q1 and Q3 surveys.

2. Duration of the study:

The North Sea Coordinated Stomach Sampling covers the period 2025-2027

3. Methodology and expected outcomes of the study

a. Sampling design

The aim of the sampling is based on the idea that a 5-year cycle can be considered stable from an environmental point of view that all fish have faced similar condition, and thus that stomach collected during all years of a cycle can be compared. Thus, the sampling design balances the need to collect large number of stomach to reach robustness, notably considering the large area covered by the sampling, and the working effort. On this basis, a species rolling scheme was designed, on the basis of end-users needs

and after exchanges with IBTS leaders. Each year, one species already included for biological sampling and another species not included have to be sampled on each trawl. 3 individuals/stomachs should be randomly selected on board, avoiding as much as possible everted, regurgitated and empty stomachs, but selecting if possible individuals already used for biological parameters sampling, to limit the sampling pressure and the processing time. In addition, species occurring in low numbers should be sampled annually. Finally, individuals of species of biological concern or whose alive individuals are usually released (mostly chondrychtians) should be included only when observed dead on board.

Calendar year	Year of the cycle	Quarter	Species	Expected no. of stomachs	Sum of all stomachs per year	"Minor" species sampled each year	Species to be sampled opportunistically each year(*)
2025	4	1	Haddock	1 362	3 665		
		3	*Melanogrammus aeglefinus*	1 221			
		1	Mackerel (Q3 only)	0			Starry ray
		3	*Trachurus trachurus*	1 082			Cuckoo ray
2026	5	1	Saithe *Pollachius virens*	534	4 112	Turbot	
		3		820			Thornback ray
		1	Red gurnard	159		Brill	
		3	*Chelidonichthys cuculus*	58		Pollack	Spotted ray
		1	Grey gurnard	1 373		Tusk	Common skate-complex
		3	*Eutrigla gurnardus*	1 168		Ling	
2027	1	1	Whiting	1 727	3 547	Tub gurnard	Spurdog
		3	*Merlangius merlangus*	1 350			Tope
		1	Anglerfish	75			
		3	*Lophius* spp.	67			Halibut
		1	Megrim	148			
		3	*Lepidorhombus whiffiagonis*	180			

(*) dead specimens; live specimens are generally release

Depending on each national vessel's specificities, regarding space available to store frozen samples, and also regarding workforce, entire fishes or dissected stomachs will be stored onboard. If fish have to be dissected, biological parameters (total length, total and gutted mass, sex and eventually sexual maturity) should be recorded on a label accompanying the stomach.

b- Analysis of the samples

Three major options lie regarding the analysis of the stomach content: (1) each country analyse its national samples, (2) most countries analyse their samples but can take stomachs from other countries in charge, or

(3) a limited number of countries are designed as "Stomach Analyses Centers", and receives all samples.

From the fishn'Co NC consultation in 2022, it appeared that, from an Atlantic and Baltic point of view, countries are split in half between those analysing stomach sampling and those unable to do the work. The outcomes of the consultation also show that combining countries willing to send their samples abroad and countries willing to analyse samples from others would cover almost the entire community (3 exceptions out of North Sea to be followed up)

Table (expected annual volumetry of stomach samples analysis) to be filled by each Member States and options to consider for approval and follow-up at RCG 2023

Table to be filtered with only countries participating to the North Sea rotating system

Country	Analysis of own samples(*)	Analysis of samples from other MS (*)	Samples to be sent abroad (*)
Belgium	example: 200-300	Example :0	Example: 100-200
France			
Netherlands			
Germany			
Sweden			
Denmark			
Poland			

(*) **Mention the number of stomach samples per year and per species**

SECTION 5: ECONOMIC AND SOCIAL DATA IN FISHERIES

Text Box 5.2: Economic and social variables for fisheries data collection

General comment: This text box fulfils Article 5(2)(e), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004, and Chapter II point 6 of the EU MAP Delegated Decision annex. It is intended to specify data to be collected under Tables 10 and 11 of the EU MAP Delegated Decision annex.
Information on regional agreements on economic and social variables for fisheries data collection are developed in the RWP on economic issues

SECTION 6: ECONOMIC AND SOCIAL DATA IN AQUACULTURE

Text Box 6.1: Economic and social variables for aquaculture data collection

General comment: This text box fulfils Article 5(2)(e), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004, and Chapter II point 6 of the EU MAP Delegated Decision annex. It is intended to specify data to be collected under Tables 10 and 11 of the EU MAP Delegated Decision annex.
Information on regional agreements on economic and social variables for aquaculture data collection are developed in the RWP on economic issues

SECTION 7: ECONOMIC AND SOCIAL DATA IN FISH PROCESSING

Text Box 7.1: Economic and social variables for fish processing data collection

General comment: This text box fulfils Article 5(2)(f), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004, and Chapter II point 7 of the EU MAP Delegated Decision annex. MS should provide justification for complementary data collection for fish processing.
Information on regional agreements on economic and social variables for fish processing data collection are developed in the RWP on economic issues

The quality report fulfils Article 6(3)(d) of Regulation (EU) 2017/1004. This document is intended to specify data to be collected under Chapter II, point 2 of the EU MAP Delegated Decision annex: Biological data on exploited biological resources caught by Union commercial and recreational fisheries. Use this document to state whether documentation in the data collection process (design, sampling implementation, data capture, data storage, sample storage and data processing) exists and identify where this documentation can be found. Names of sampling schemes and strata shall be identical to those in Tables 2.2, 2.3, 2.4, 2.5, 2.6 and 4.1 of the WP/AR. In case of quality information on scientific surveys, use the survey acronym as a sampling scheme identifier. For mandatory surveys, refer to Table 1 of the EU MAP Implementing Decision annex, see also MasterCodeList 'Mandatory survey at sea'.

MS: BE, DE, DK, FR, NL, SE; along with UK-ENG and UK-SCO through their participation to IBTS
Region: North-East Atlantic: North Sea, Skagerrak and Kattegat
Sampling scheme identifier: Regional stomach content sampling
Sampling scheme type: Research survey at sea
Observation type: SciObsAtSea (Scientific observer at sea on commercial or scientific vessels)
Time period of validity: 2022 to present
Fundamental changes in the importance of natural versus fishing induced mortality have been observed in the North Atlantic while moving towards maximum sustainable yield (MSY) management targets. The reduction of fishing mortality in combination with successive recovery of fish stocks, especially of some larger predatory species, led to an increasing natural mortality as opposed to fishing mortality. Consequently, estimates of natural mortality have become more important for stock assessments and forecasts. In general, information on prey availability, competition and predation processes in fish stomachs are needed to support several policies (e.g., Common Fisheries Policy (CFP), EU Marine Strategy Framework Directive (MSFD)) that envisage an Ecosystem Approach to Fisheries (EAF) and an Ecosystem Based Fisheries Management (EBFM). The main objective of the North Sea regionally Coordinated Stomach Sampling programme is to propose a full set up covering on-board sampling, stomachs analyses in laboratory, data storage and report – in European waters, starting with the North Sea, Skagerrak and Kattegat as a case study and using IBTS Q1 and Q3.
Description of the population
Population targeted: A large number of species (Whiting, Anglerfish, Megrim, Cod, Horse Mackerel, Hake, Plaice, Haddock, Mackerel, Saithe, Red gurnard, Grey gurnard, Turbot, Brill, Pollack, Tusk, Ling, Tub gurnard, Starry ray, Cuckoo ray, Thornback ray, Spotted ray, Common skate-complex, Spurdog, Tope, Halibut) are targeted, as the aim of this sampling is to provide more accurate picture of natural mortality and trophic interactions in multispecies assessment models. **Population sampled:** populations of the species mentioned above occurring in the area covered by IBTS survey in the North Sea, Skagerrak and Kattegat

Stratification: The geographical survey area uses IBTS protocol
Sampling design and protocols

Sampling design description:

Protocol for stomach sampling at sea

Following the species rolling scheme (see table below), one/two species already sampled for biology and one/two species are to be collected each year, along with all individuals of species occurring in low numbers, and dead individuals of species of some concern (i.e. individuals of species usually released, mostly sharks and rays).

Year of DCF cycle	Quarter	Species	"Minor" species sampled each year	Species to be sampled opportunistically each year (dead specimens; live specimens are generally released)
1	1	Whiting		
	3			
	1	Anglerfish		
	3			
	1	Megrim		
	3			
2	1	Cod		Starry ray
	3			Cuckoo ray
	1	Horse Mackerel	Turbot	Thornback ray
	3		Brill	
3	1	Hake	Pollack	Spotted ray
	3		Tusk	Common skate-complex
	1	Plaice	Ling	Spurdog
	3		Tub gurnard	
4	1	Haddock		Tope
	3			
	1	Mackerel (Q3 only)		Halibut
	3			
5	1	Saithe		
	3			
	1	Red gurnard		
	3			
	1	Grey gurnard		

		3			

Depending on the freezing space onboard and on workforce available to dissect stomach, fish and/or dissected stomachs could be collected. Everted or regurgitated stomachs should be avoided.

3. Check the individual predators for evidence of regurgitation. Do not sample stomachs showing evidence of regurgitation, but remember to record them.

4. Sample the other (valid) stomachs (with and without contents) and avoid loss of prey remains when cutting the esophagus during removal of the stomach from the fish.

5. Bag the fishes/stomachs individually (also empty stomachs) and preserve them by freezing as quickly as possible after removal from the fish. Each bag should contain a label giving the following information: Ship, Cruise/Survey, Station number, Haul number, Species, Total body length (mm), Sample ID

6. Record further relevant data including the number of regurgitated stomachs using the ICES data exchange format (https://www.ices.dk/data/data-portals/Pages/Fish-stomach.aspx)

7. Either analyze the stomach contents at the laboratory or send the frozen stomachs to the stomach analysis center (SAC) upon arrival

Is the sampling design compliant with the 4S principle? NA

Regional coordination: Coordination of the at-sea sampling is currently performed by the RCG ISSG stomach content, with frequent exchanges with WGIBTS. Evolution of this coordination is a crucial question that should be tackled soon

Link to sampling design documentation: NA

Compliance with international recommendations: Y

Sampling implementation
Recording of refusal rate: NA
Monitoring of sampling progress within the sampling year: NA (Annual survey)
Data capture
Means of data capture: Fishes are collected by bottom-trawling during IBTS, following IBTS protocol

evaluated by the ICES IBTSWG. After fish/stomach collection, each sample will be recorded by an individual id.

Data capture documentation: NA

Quality checks documentation: NA

Data storage
National database: Depending on the choice made regarding the stomach analysis option ((1) each country analyses its own stomachs, (2) bilateral agreements, (3) centralization of stomachs in Stomachs Analyses Centres), countries can proceed their own national databases.   **International database:** ICES stomach content database, if the money requested to update and maintain the base is allocated   https://www.ices.dk/data/data-portals/Pages/Fish-stomach.aspx   **Quality checks and data validation documentation:** NA
Sample storage
Samples (whether dissected stomachs or entire fish) will be stored frozen onboard and in lab's freezers after landing. Money dedicated to freezing spaces (whether freezers or spaces in industrial freezing facilities) should be allocated, as institutes do not have the possibility to store the large volume of stomachs during long period of time in the freezers they currently have.   If the stomachs are analysed in centralised labs, transportation of frozen material and associated costs should be considered. It is mandatory that stomachs remained frozen, or samples would be not readable.
Data processing: not applicable yet. All aspects regarding data processing will be discussed along with end users after the collection of the first data.