

**MINISTRY OF AGRICULTURE
EXECUTIVE AGENCY FOR
FISHERIES AND AQUACULTURE**



**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 27 April 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 27 April
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

**Commission Implementing Decision (EU) 2022/39 of 12 January
2022**

laying down rules on the format and timetables for the submission of national work plans and annual reports for data collection in the fisheries and aquaculture sectors, and repealing Implementing Decisions (EU) 2016/1701 and (EU) 2018/1283

Bulgaria Annual Report on data collection in the fisheries and aquaculture sectors

2022

Version 3

Burgas, 30.05.2023

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Section 1: General information

Data collection framework at national level

General comment: Use this text box to describe how data collection is organised in your Member State (institutions involved, contact information) and in which regional coordination groups (RCG) your Member State participates.

Outline the general framework of the national data collection programme in relation to the relevant sections of the EU MAP. If applicable, indicate major methodological changes in approach compared to previous year(s), and to which section(s) they apply.

Give full name, acronym and contact details of all institutes that contribute to the data collection activities, and describe briefly their role in the work plan.

Provide a link to the national data collection website, if there is one.

The managing authority for the implementation of the Bulgaria Work Plan for collection, management and use of data in the fisheries and aquaculture sectors is the Executive Agency for Fisheries and Aquaculture (EAFA). The coordination of the implementation of the WP is carried out by national correspondent – Ms Simona Nicheva.

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1. Institute of Oceanology - Bulgarian Academy of Sciences (IO-BAS)

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The Institute of Oceanology, Bulgarian Academy of Sciences is conducting the pelagic trawl surveys and the biological monitoring of pelagic species from commercial fisheries.

2. Institute of Fisheries and Aquaculture (IFA)

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The Institute of Fisheries and Aquaculture is involved in the biological monitoring of turbot from commercial fisheries.

3. Institute of Fish Resources (IFR)

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The Institute of Fish Resources is conducting the bottom trawl surveys, biological monitoring of rapa whelk from commercial fisheries and observers' on board programme.

Link to the Bulgarian data collection website: <http://dcf-bulgaria.bg/>

(max. 1000 words)

Text Box 1b: Other data collection activities

General comment: Use this text box to provide information on other data collection activities that relate to your EMFAF operational programme and need to be included in the work plan and the annual report. Describe activities that are 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 or WP template tables, like freshwater fisheries. You can also include one-off specific studies for a particular end-user need that do not enter the regular data collection.

Name of the study: SecWeb

1. Aim of the data collection activity

Follow-up for the Project SecWeb (Mare 2020-08) to have a long-term supportive structure for RCGs on administrative side. Functioning secretariat that gives administrative support for RCG and ISSG chairs and manage the RCG web page (<https://www.fisheries-rcg.eu/>).

2. Duration of the data collection activity

01/01/2023 - 31/12/2024

3. Methodology and expected outcomes of the data collection activity

Below are presented the methodology and expected outcomes from the SecWeb project which should be continued in the following period starting from 2023.

The Regional Coordination Groups (RCGs) are the main hub for regional coordination and cooperation between member states within the different regions. The RCGs should in accordance with Council Regulation (EU) 2017/1004 aim at developing and implementing procedures, methods, quality assurance and quality control for collecting and processing data with a view to enable the reliability of scientific advice to be further improved. The RCGs may further prepare draft regional work plan, complementing or replacing the national work plan MS submit to the Commission on a regular basis. The RCGs have further a key role to interact with end-users of scientific data (EU) 2017/1004 and to, after end-user consultation, coordinate and agree on details in data to be collected and managed on the regional level ((EU) 2021/1167).

All the above is of interest to all member states, active in one or more regions.

This project on developing the supporting tools is currently funded by the Commission. For the long term development of the tools to support the work of the RCGs, and as such support the different MS, suggestions were presented and discussed at the RCGs (NA NS&EA and Baltic) technical meetings in June 2020 & 2021 and presented to the NCs during the Decision meeting in September 2020&2021. In principal, the MS agrees, but the NCs requested more time to take this into account and requested a better insight in what would be provided before a national contribution for the funding decided. Therefore, within this project, the different business scenarios are further developed and will be presented to all member states.

Objectives of this activity is to:

1. Develop a framework and setup a secretariat in support of fluent administrative procedures of the RCGs and establish a suitable long-term financial script for that;
2. Promote good practices in communication within and among the RCGs and engaging

with all the MS, and other stakeholders;

3. Develop and setup a website linked with existing (relevant) websites and SharePoint, and to improve the overall capacity to reach out to the member states and to a wider audience about past and present RCG work;

4. Identify tools to increase the visibility of the work and outputs of the RCGs

Methodology

WP 1: Setting up the secretariat in support to RCGs and ISSGs,

The tasks of the RCG secretariat are defined in coordination with RCGchairs. This includes the support to organize RCG meetings, reporting and communication tasks, as well as the follow up of the intersessional work. As a case study, a secretariat is set up to support the RCG NA NSEA & RCG Baltic.

WP2: Developing and operating a website

Based on a process of consultation with the RCG, MS and end-users are contacted to collect input for the website.

Within the website, a repository for documents needs to be available where confidential information can be stored. This information is of high value for the member states and will be reachable by the MS.

WP3.Ensuring future operation and funding:

This WP takes into account the output from WP1& and WP2. Through the activities in this WP different business models for long term funding will be developed and presented.

Expected outcomes:

1. The provision of dedicated Secretariat support for the RCGs to ensure the efficient use of RCG MS resource allocation.

2. A website developed by the end of 2021 with following features:

→Integration - synchronization with third-party applications.

→Responsive - to serve content across multiple screens and platforms.

→User experience- maintain a consistently good user experience.

→Accessibility - All levels of society and end-users need to be able to access in a friendly used way.

→Retention- keep visitors coming back

→Links to protected part outside the website as repository for confidential documents

3. Visual identity for RCGs

4. Stakeholders database

5. Internal communication protocol

6. Integration of the results of the Mare2020/08 Annex I project

7. A business scenario acceptable for all MS in the different regions and COM to ensure the long-term existence of a secretariat and the RCG website

A detailed description of the secretariat functions, the implementation of the secretariat, the content of the website, the building blocks of the website and the business model for the provision of Secretariat role and website continuation (updating& maintenance) will be provided.

Future progress in continued support for regional coordination depends on the project's outcomes and the selected route to proceed and fund the required work. As regional coordination is the cornerstone of the collective approach to data collection, the continuation of the work may be embedded in a regional work plan in the future based on national input and support.

(max 900 words per activity)

Name of the study: SecWeb

Brief description of the results (including deviations from the plan and justifications as to why if this was the case).

During 2022 the activities of the RCGs Secretariat still developed in the context of the SecWeb Project, which was extended to last until the end of February 2023. The RCG experts and the Member States' NCs engaged in several discussions about the long-term stabilization of the Secretariat services, given the value added by the project to the RCGs networks, and agreed on a short term solution for continuity in 2023 which was incorporated with a statement in "Text Box 1b: Other data collection activities" of the Annual Work Plans of the Member States.

Achievement of the original expected outcomes of the study and justification if this was not the case.
Original outcomes were achieved.

Incorporation of study results into regular sampling by the Member State.
The longer term perspective will build upon the outcomes from SECWEB and dealt with inter-sessionally and pan regionally by ISSG NCs in 2023 and beyond.
(max. 900 words per study)

SECTION 2: BIOLOGICAL DATA

Text Box 2.1: List of required species/stocks

(Region/RFMO/RFO/IO: Mediterranean and Black Sea)

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 2.1(a) of the EU MAP Delegated Decision annex. This text box applies to the annual report and complements Table 2.1.

Deviations from the work plan

List the deviations (if any) in the achieved data collection (lengths only) compared to what was planned.

The general reasons for deviations from the work plan in terms of planned vs. achieved data collection should be summarised in this section, while detailed comments on deviations on particular species/stocks should be included in the 'AR comments' column in Table 2.1.

The deviations concerned *Scophthalmus maximus*, *Trachurus mediterraneus* and *Engraulis encrasicolus* - the achieved number of individuals measured for length at national level is more than 150% higher than the planned minimum because the Institute for fisheries and aquaculture /responsible for the biological monitoring of turbot/ and Institute of oceanology /responsible for the biological monitoring of horse mackerel and anchovy/ decided to investigate more landings in order to obtain a higher level of significance. The oversampling did not lead to any financial burdens.

Actions to avoid deviations

Describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed. According to the scientists from the research institutes in Bulgaria, the collection of more samples and the measurement of biological parameters of more individuals than the minimum planned in the work plan (when this is possible and does not cost additional funds) contribute to more reliable and detailed results to be used for stock assessments.

(One text box of max. 1 000 words per region/RFMO/RFO/IO)

Text Box 2.2: Planning of sampling for biological variables

(Region/RFMO/RFO/IO: Mediterranean and Black Sea)

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 2.1(a) of the EU MAP Delegated Decision annex. This text box applies to the annual report and complements Table 2.2.

Deviations from the work plan

List the deviations (if any) in the achieved collection of biological data (other than lengths), compared to what was planned.

The general reasons for deviations from the work plan in terms of planned vs. achieved data collection should be summarised in this section, while detailed comments on deviations on particular species/stocks should be included in the 'AR comments' column in Table 2.2.

The deviations concerned *Scophthalmus maximus*, *Trachurus mediterraneus* and *Engraulis encrasicolus* - the achieved number of individuals measured for weight at national level is more than 150% higher than the planned minimum because the Institute for fisheries and aquaculture /responsible for the biological monitoring of turbot/ and Institute of oceanology /responsible for the biological monitoring of horse mackerel and anchovy/ decided to investigate more landings in order to obtain a higher level of significance. The oversampling did not lead to any financial burdens.

Engraulis encrasicolus was not present in the catch during the spring and autumn PTSBS, so even though the collection of biological data for the species from the research survey was planned in Table 2.2, it was not possible.

Actions to avoid deviations.

Describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed. According to the scientists from the research institutes in Bulgaria, the collection of more samples and the measurement of biological parameters of more individuals than the minimum planned in the work plan (when this is possible and does not cost additional funds) contribute to more reliable and detailed results to be used for stock assessments. The biological data for *Engraulis encrasicolus* in the future PTSBS will be collected and reported if catches exist.

(One text box of max. 1 000 words per region/RFMO/RFO/IO)

Text Box 2.4: Recreational Fisheries

(Region: Mediterranean and Black Sea)

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 to collect data on marine and freshwater recreational catches. For freshwater diadromous species, use Table and Text Box 2.3.

Description of the sampling scheme/survey according to Table 2.4.

The pilot project for assessment of the share of catches from recreational fisheries in relation to commercial catches by the Bulgarian fleet in the Black sea, which was planned for initially for 2020 in the previous work plan, was postponed for 2021 due to Covid-19 restrictions and administrative burdens. The outcomes from it should be available at the beginning of 2022. One of the expected results from the survey is a full list of species that are caught from the recreational fisheries. After analysing the collected information during the pilot study this text box and Table 2.4 will be revised according to the results.

The currently available information is that the species are not presented in the area, there are no records for catch or landings in the last decades. Statements from our research institutes are available on the Bulgarian DCF web page - <http://dcf-bulgaria.bg/data-collection-methodologies/>.

(max 900 words per region)

Deviations from the work plan

List the deviations (if any) in the achieved data collection, compared to what was planned in the work plan and explain the reasons for the deviations.

The pilot project for assessment of the share of catches from recreational fisheries in relation to commercial catches by the Bulgarian fleet in the Black sea, which was planned for initially for 2020 in the previous work plan, was postponed for 2021 due to Covid-19 restrictions and administrative burdens. A screening survey to identify the target population of recreational fishers and their fishing characteristics was performed in 2022, according to the Grati, F., Carlson, A., Carpentieri, P. & Cerri, J. 2021 Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea. FAO Fisheries and Aquaculture Technical Paper No 669. Rome, FAO.

The main object of the pilot study on recreational fishing in the Black Sea, through a screening survey, was the assessment of the number of recreational fishers practicing marine fishing across the Bulgarian Black Sea coast. The method of obtaining information was a telephone survey with a

nationally representative sample of 1 000 respondents on the territory of the country.

According to the respondents who answered affirmatively to the question of whether they are engaged in marine recreational fishing on the Bulgarian Black Sea coast, 2.2% of the adult population of Bulgaria over 18 years of age are engaged in recreational marine fishing. As a number, this part of the population is about 121 589 people. In addition, was provided information regarding the most visited places by recreational fishers, which methods and gears they used, what is the total number of days during which recreational fishing was practiced, what are the species of fish and/or other marine organisms that are most often caught, the quantity by species and comparison with the commercial fisheries. In regards to the obtained data the most often species caught are species from the *Gobiidae* family followed by Mediterranean horse mackerel, mullet, and bluefish. The total quantity caught by recreational fishers represents 6.8% of the total commercial catches in 2021, and the value for this species mentioned by the recreational fisheries is estimated to be 9.6% of the total value of commercial landings in 2021.

The result of the survey presents quite an interesting situation regarding the marine recreational fisheries in the Bulgarian Black sea waters, which is based on the opinion of 22 respondents from the pilot study. The importance of this part of the fisheries seems to be questionable, due to the low number of respondents who answered that they are fishing in the Black sea 22 from 1000 contacted, some of the estimations are considered not very reliable, especially regarding the quantities of red mullet that respondents of the survey provided. From all species that were caught by the recreational fishermen there is only one which is listed in Table 2.4 of the Bulgarian Work Plan - *Sarda Sarda*, but the estimated amount for the whole year is just 0.8 tonnes.

In order to ensure continuity of data collection regarding marine recreational fisheries, comparability with the already available data, and ensure the taking of right decisions based on more reliable data Bulgaria will conduct a new survey in 2024. The report from the survey is available at: <http://dcf-bulgaria.bg/documents/>.

The currently available information is that the species eel (including in fresh water), elasmobranchs and highly migratory ICCAT species, listed in Table 4 COMMISSION DELEGATED DECISION (EU) 2021/1167 of 27 April 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, are not presented in the area, there are no records for catch or landings in the last decades. Statements from our research institutes are available on the Bulgarian DCF web page - <http://dcf-bulgaria.bg/data-collection-methodologies/>.

Action to avoid deviations

Describe the actions that will be considered/have been taken to avoid the deviations in the future and when these actions are expected to produce results.

There were no deviations.

In order to ensure continuity of data collection regarding marine recreational fisheries, comparability with the already available data, and ensure the taking of right decisions based on more reliable data Bulgaria will conduct a new survey in 2024.

(max 900 words per region)

Text Box 2.5: Sampling plan description for biological data
(Region/RFMO/RFO/IO: Mediterranean and Black Sea)

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) of the EU MAP Delegated Decision annex. This text box complements Table 2.5.

This text box is complementary to information on the sampling schemes provided in the quality document (Annex 1.1). It serves to highlight additional information on sampling schemes and sampling frames that the Member State considers useful to understand the sampling design planned for the region and the implementation year(s).

Additional information regarding the biological monitoring of turbot:

100 individuals per year will be collected - 50 turbot caught in the second quarter and 50 turbot caught in the fourth quarter will be purchased for analysis of gender, age structure determination and stomach content. Based on the collected gonads, the gender, the gonadosomatic index, and the maturity stage will be determined. From the same specimens, samples of otoliths will also be collected to determine the turbot's age. Correlations between the measured parameters are determined. The Gonadosomic Index (GSI,%) will also be determined. The fecundity is determined based on females caught during the breeding season (February-May).

According to the experience gained in previous years, from 100 purchased specimens less than a half are with full stomach, so the planned full stomachs for analysis are 20 full stomachs in the 2nd quarter and 15 a full stomachs in 4th quarter. If more full stomachs are available, they will also be analysed.

Additional information regarding the biological sampling of pelagic species:

Feeding and stomach content analysis of pelagic species from biological monitoring is not planned in the period 2022-2024. Since in the previous period sampling methodology for stomach content has been applied for species landed on shore and the results from the approbation of methodology showed that almost 100 percent of the stomachs were empty. The scientific teams' conclusions regarding the empty stomachs were that all quantities of the landed fish (already dead) is not suitable for further fixation as the stomachs is supposed to be empty and/or gastric contents were heavily digested, and further identification at the species and genus level was not possible. The institutes responsible for gastric content analysis in both Romania (NIMRD) and Bulgaria (IO-BAS) agreed to exclude the stomach content analysis from landings of the present work plan in Bulgarian and Romanian Black Sea marine zone and instead of it, including the stomach content analysis in the PTSBS.

Additional information on sampling schemes

You may add specific contextual information related to a region and the implementation year(s), for instance highlighting new developments not yet detailed in the quality document, regional adaptation and/or perspectives for the future. Insert the information under the same sampling scheme identifier as in Table 2.5.

According to the agreement between Bulgaria and Romania, both countries will undertake annually biological monitoring in their territorial waters and EEZ under their jurisdiction, following common methodology and harmonization of biological data sampling. The agreement is available at the following link: <http://dcf-bulgaria.bg/wp-content/uploads/2021/10/Agreement-on-data-collection-activities-between-Bulgaria-and-Romania-2021-2027.pdf>

Additional description of sampling frames

You may add a complementary description to what includes the 'Sampling frame description' column of Table 2.5. Insert the information under the same identifier and name as in the columns 'Sampling frame identifier' and 'Sampling frame description' of Table 2.5, and in the same order (Sampling frame identifier + Sampling

frame description).

The 'Sampling frame description' in Table 2.5 includes information for the type of gears used by the fishing vessels operating in the Black Sea, the target species and ports.

(One text box (max. 1 000 words) per region/RFO/RFO/IO)

Sampling scheme identifier: SciObsOnShore*Commercial fishing trip*Selected species/stocks

Deviations from the work plan

List deviations (if any) in the achieved data collection compared to what was planned in the work plan and explain the reasons for the deviations.

In Table 2.5 the Achieved number of PSUs is more than 150% higher than the planned minimum for the sampling identifier SciObsOnShore*Commercial fishing trip*Selected species/stocks_OTM_ANE,SPR,WHG,MUT,HMM because the Institute of oceanology decided to investigate more landings in order to obtain a higher level of significance. The oversampling did not lead to any financial burdens.

Actions to avoid deviations

Describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed. According to the scientists from the research institutes in Bulgaria, the collection of more samples and the measurement of biological parameters (including stomach sampling) of more individuals than the minimum planned in the work plan (when this is possible and does not cost additional funds) contribute to more reliable and detailed results to be used for stock assessments. In regards to the stomach sampling, the numbers of specimens with full stomach could not be predicted, all the available stomachs were analysed.

Sampling scheme identifier: SciObsAtSea*Commercial fishing trip*All species

Deviations from the work plan

List deviations (if any) in the achieved data collection compared to what was planned in the work plan and explain the reasons for the deviations.

No deviations from the WP.

- The information for the stomach sampling is provided in this Text Box, because initially it was included in Text Box 2.5, since there was no other relevant Text Box in which to write it without separating it between the different surveys and sampling schemes (PTSBS, BTSBS and SciObsOnShore*Commercial fishing trip*Selected species/stocks.) The stomach sampling and analysis of *Scophthalmus maximus* from BTSBS were higher than the planned, because there were more available full stomachs than the expected minimum. The stomach sampling and analysis of *Sprattus sprattus* and *Trachurus mediterraneus* from PTSBS were less than initially planned, because from all sprat specimens caught during the PTSBS, only 110 were with full stomachs, and from all *Trachurus mediterraneus* specimens only 40 were with full stomachs, all the rest were with empty stomachs.

Actions to avoid deviations

Describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed.

(One text box of max. 1 000 words per region/RFMO/RFO/IO)

Text Box 2.6: Research surveys at sea

(Research survey: Pelagic Trawl Survey in the Black Sea (PTSBS))

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 annex. It is intended to specify which research surveys at sea, as set out in Table 2 of the EU MAP Implementing Decision annex will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU MAP Implementing Decision annex or whether it is an additional survey.

(Use one text box per survey)

Name of the research survey: Pelagic Trawl Survey in the Black Sea (PTSBS)

1. Objectives of the survey

For mandatory surveys: list the full list of target species/ecosystem components set by the coordinating group (as opposed to the target species provided in Table 1 of the EU MAP Implementing Decision) and the international, and additional national objectives.

For non-mandatory surveys: describe the purpose of the survey including sampling activities and target species/ecosystem components, the end user and how the data are used.

The target species of the pelagic trawl survey in the Black Sea is sprat. According to the list of species caught during the previous pelagic trawl surveys, an analysis of the biomass and abundance of red mullet, anchovy and Mediterranean horse mackerel will also be done, if they exist in the catch.

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.

Indicate the time period for the survey (same as in Table 2.6). If documentation of the survey design and methods used is available online in English, you can refer to that documentation.

PTSBS will be accomplished in June-July and October-November each year. The research survey will be held in the area enclosed between Durankulak and Ahtopol (Bulgaria) with a total length of the coastline of 370 km. The study area encloses waters between 42°05' and 43°45' N and 27°55' and 29°55' E, Bulgarian waters will be partitioned into 128 equal in size, not overlying fields and during the survey 36 random mid-water hauls will be carried out in the Bulgarian area. The survey undergoes during the day and the following types of data were collected: coordinates and duration of each trawl, sprat total catch weight, separation of the by-catch by species, composition of by-catch, conservation of the samples.

To establish the abundance of the reference species in front of the Bulgarian coast a standard

methodology for stratified sampling was employed (Gulland, 1966;). To address the research objectives the region was divided into the following strata according to depth – Stratum 1 (15-35 m) Stratum 2 (35–50 m), Stratum 3 (50–100 m). Each field is a rectangle with sides 5'Lat×5'Long and an area around 62.58 km² (measured by application of GIS), large enough for a standard lug extent in a meridian direction to fit within the field boundaries. At each of the fields, only one haul with a duration between 30-40 min at speed 2.7-2.9 knots will be carried out. The documentation of the survey design and methods used is available online in English at <http://dcf-bulgaria.bg/data-collection-methodologies/> - Methodology for the Pelagic trawl survey in the Bulgarian Black Sea area.

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

In Bulgaria, the pelagic trawl surveys are performed without the participation of other MS, but according to the agreement between Bulgaria and Romania, both countries will undertake annually research surveys in their territorial waters and EEZ under their jurisdiction, following common methodology, harmonization of biological data sampling and analysis and harmonization of stock assessment methods. The agreement is available at the following link: <http://dcf-bulgaria.bg/wp-content/uploads/2021/10/Agreement-on-data-collection-activities-between-Bulgaria-and-Romania-2021-2027.pdf>

Both countries will follow the methodologies published in their web pages, accomplished by the Technical guidelines for scientific surveys in the Mediterranean and the Black Sea. - FAO Fisheries and Aquaculture Technical Papers No. 641. and methodologies already adopted by other EU countries: MEDIAS HANDBOOK. The pelagic trawl survey results are presented during the MEDIAS meeting.

Since there is no active national scientific vessel the institute responsible for the survey is using a commercial vessel /or scientific vessel owned by a private company/, hired after a public procurement. Due to this, the exact name of vessel will be mentioned in the annual report.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied. *For Type of participation other than 'Financial' describe the type of participation, and/or the background of the type of participation in more detail.*

The type of participation was marked in Table 2.6 as 'Combination' even though no other MS participate in the pelagic trawl surveys performed in the Bulgarian territorial waters. The 'Combination' consists of 'Financial', 'Technical' and 'Personnel', but none of them is a matter of Cost-sharing agreement, because the signed agreement with Romania is only for coordination of methodologies and activities.

(max 450 words per survey)

5. For internationally coordinated surveys, provide a link to the latest meeting report of the coordination group.

Provide a link to the meeting report from the body coordinating the survey (ICES, MEDITS coordination group, MEDIAS coordination group, etc.). For surveys that are not internationally coordinated, refer to any status report (e.g. Cruise report).

Bulgarian pelagic trawl surveys are coordinated with Romania.

https://datacollection.jrc.ec.europa.eu/docs/rcg?p_p_id=110_INSTANCE_FMxyil88Aos3&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_count=1&_110_INSTANCE_FMxyil88Aos3_struts_action=%2Fdocument_library_displa

[y%2Fview file entry& 110 INSTANCE FMxyil88Aos3 redirect=https%3A%2F%2Fdatacollection.jrc.ec.europa.eu%2Fdocs%2Frcg%3Fp id%3D110 INSTANCE FMxyil88Aos3%26p p lifecycle%3D0%26p p state%3Dnormal%26p p mode%3Dview%26p p col id%3Dcolumn-2%26p p col count%3D1& 110 INSTANCE FMxyil88Aos3 fileEntryId=1342583](https://www.fao.org/gfcm/technical-meetings/detail/en/c/1609439/)

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1609439/>

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1439089/>

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1442355/>

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1440228/>

<https://www.fao.org/gfcm/data/safs/en/>

Bulgaria is taking part in MEDIAS annual meetings and reports:

<http://www.medias-project.eu/medias/website/meetingrep.html>

Information on the methodology of the pelagic trawl survey is available at the following link: <http://dcf-bulgaria.bg/documents/> - under Data Collection Methodologies.

If possible, Romanian scientists are participating in the pelagic research surveys in Bulgaria and Bulgarian scientists are participating in the Romanian pelagic surveys. In 2022 this exchange did not happen, due to the changeable weather and overlapping commitments, but scientists from the responsible institutes are in constant exchange of experience and participate in many joint meetings.

6. List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators). Specify in which context the results are used (on a routine basis), both in international and national context. *If presenting maps of the achieved research survey stations is necessary, provide them as an annex. Refer clearly to the annex and map numbers.*

The survey indices of relative abundance (in numbers) were derived in order to calculate the biomass indices in the respective area (EEZ of Bulgaria). The abundance indices were used in further calculations for the tuning files for stock assessment purposes (historical reconstructions of biomass). The maps of the achieved research survey stations are available in Annex 4.1 - Maps 4.1. – Maps from the pelagic trawl survey 2022.

7. Extended comments

The planned days-at-sea and the number of sampling activities for pelagic trawl survey were carried out within the official time period and the official survey area.

(max. 450 words per survey)

Research survey: Bottom Trawl Survey in the Black Sea (BTSBS)

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 annex. It is intended to specify which research surveys at sea, as set out in Table 2 of the EU MAP Implementing Decision annex will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU MAP Implementing Decision annex or whether it is an additional survey.

(Use one text box per survey)

Name of the research survey: Bottom Trawl Survey in the Black Sea (BTSBS)

1. Objectives of the survey

For mandatory surveys: list the full list of target species/ecosystem components set by the coordinating group (as opposed to the target species provided in Table 1 of the EU MAP Implementing Decision) and the international, and additional national objectives.

For non-mandatory surveys: describe the purpose of the survey including sampling activities and target species/ecosystem components, the end user and how the data are used.

The target species in the BTSBS are turbot, piked dogfish and whiting. The surveys results will include an estimation of the biomass indexes and density of the species by depth strata.

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.

Indicate the time period for the survey (same as in Table 2.6). If documentation of the survey design and methods used is available online in English, you can refer to that documentation.

The BTSBS will be conducted in May-June and November-December each year. To establish the abundance and biomass of turbot, piked dogfish and whiting a standard methodology for stratified sampling (Gulland, 1966; Sparre, Venema, 1998;) will be applied.

The surveyed design will follow the scheme of the previous demersal surveys, e.g. the region will be divided into four strata, depending on the depth - Stratum 1 (15-35 m), Stratum 2 (35-50 m), Stratum 3 (50-75 m) and Stratum 4 (75-100 m). For assessment of abundance and biomass, the surveyed territory is divided into 143 squares, each of them with sides 5 x 5 Nm, area 25 Nm². The sampling will be carried out at 36 randomly chosen fields (rectangles), situated at a depth between 15-100 m. Each rectangle is with sides 5' Lat × 5' Long, while the total area is 62.58 km² (measured by GIS). Each field should be marked with letters and digits for better distinction.

The seabed area covered during a single haul represents a basic measurement unit, considered representative, as turbot do not aggregate in dense assemblages.

The duration of each haul is 60 min at the trawling speed of 2.2-2.6 knots.

The research survey should include the following main activities: bottom trawl sampling, qualitative and quantitative analysis of the catches, identification of biological diversity, biometric measurements, collection of otoliths for age determination of turbot and other demersal species, sampling and analysis of stomach content of turbot for identification of quantity and composition of the consumed food, sampling of gonads, when possible.

The documentation of the survey design and methods used is available online in English at <http://dcf-bulgaria.bg/data-collection-methodologies/> - Methodology for the Bottom trawl survey in the Bulgarian Black Sea area.

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

In Bulgaria, the bottom trawl surveys are performed without the participation of other MS, but according to the agreement between Bulgaria and Romania, both countries will undertake annually research surveys in their territorial waters and EEZ under their jurisdiction, following common methodology, harmonization of biological data sampling and analysis and harmonization of stock assessment methods. The agreement is

available on the following link: <http://dcf-bulgaria.bg/wp-content/uploads/2021/10/Agreement-on-data-collection-activities-between-Bulgaria-and-Romania-2021-2027.pdf>.

Both countries will follow the methodologies published in their web pages, accomplished by the Technical guidelines for scientific surveys in the Mediterranean and the Black Sea. - FAO Fisheries and Aquaculture Technical Papers No. 641. and methodologies already adopted by other EU countries: MEDITS handbook. The bottom trawl survey results are presented during the MEDITS meeting.

Since there is no active national scientific vessel the institute responsible for the survey is using a commercial vessel /or scientific vessel owned by a private company/, hired after a public procurement. Due to this, the exact name of vessel will be mentioned in the annual report.

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

For Type of participation other than 'Financial' describe the type of participation, and/or the background of the type of participation in more detail.

The type of participation was marked in Table 2.6 as 'Combination' even though no other MS participate in the bottom trawl surveys performed in the Bulgarian territorial waters.

The 'Combination' consists of 'Financial', 'Technical' and 'Personnel', but none of them is a matter of Cost-sharing agreement, because the signed agreement with Romania is only for coordination of methodologies and activities.

(max 450 words per survey)

5. For internationally coordinated surveys, provide a link to the latest meeting report of the coordination group.

Provide a link to the meeting report from the body coordinating the survey (ICES, MEDITS coordination group, MEDIAS coordination group, etc.). For surveys that are not internationally coordinated, refer to any status report (e.g. Cruise report).

https://datacollection.jrc.ec.europa.eu/docs/rcg?p_p_id=110_INSTANCE_FMxyil88Aos3&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_count=1&110_INSTANCE_FMxyil88Aos3_struts.action=%2Fdocument+library+display%2Fview+file+entry&110_INSTANCE_FMxyil88Aos3_redirect=https%3A%2F%2Fdatacollection.jrc.ec.europa.eu%2Fdocs%2Frcg%3Fp_p_id%3D110_INSTANCE_FMxyil88Aos3%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_count%3D1&110_INSTANCE_FMxyil88Aos3_fileEntryId=1342583

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1609439/>

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1439089/>

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1442355/>

<https://www.fao.org/gfcm/technical-meetings/detail/en/c/1440228/>

<https://www.fao.org/gfcm/data/safs/en/>

Information on the methodology of the bottom trawl survey is available at the following link: <http://dcf-bulgaria.bg/documents/> - under Data Collection Methodologies.

If possible, Romanian scientists are participating in the bottom research surveys in Bulgaria and Bulgarian scientists are participating in the Romanian bottom surveys. In 2022 one Bulgarian scientist participated in the Romanian survey and one Romanian scientist participated in the Bulgarian bottom trawl survey.

6. List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators). Specify in which context the results are used (on a routine basis), both in international and national context. *If presenting maps of the achieved research survey stations is necessary, provide them as an annex. Refer clearly to the annex and map numbers.*

IFR Varna conducted two seasonal bottom trawl surveys (in spring and autumn 2022) to obtain data about the turbot biomass and abundance in Bulgarian Black Sea waters. The turbot biomass was estimated at 1775.96 tonnes in July and 1696.67 tonnes in December, and the turbot abundance in the surveyed area was estimated at 1 072 483 individuals in July and 814 652 individuals in December.

Results of the survey are used at national and international level as contribution to analytical stock assessments of demersal species.

The maps of the achieved research survey stations are available in Annex 4.2 - Maps 4.2. – Maps from the bottom trawl survey 2022.

7. Extended comments

Extended AR comments can be placed under this section.

The planned days-at-sea and the number of sampling activities for bottom trawl survey were carried out within the official time period and the official survey area.

(max. 450 words per survey)

SECTION 4: IMPACT OF FISHERIES ON MARINE BIOLOGICAL RESOURCES

Text Box 4.2: Incidental catches of sensitive species

(Region/RFMO/RFO/IO: Mediterranean and Black Sea)

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.

This text box is complementary to information on the sampling schemes provided in the quality document (Annex 1.1). It serves to highlight information on sampling schemes and sampling frames related to incidental catches of sensitive species.

The information on incidental catches of sensitive species (Protected, Endangered and Threatened Species - PETs) will be collected on an annual basis by scientific observers onboard the commercial fishing vessels.

The research survey is focused on data collection for the incidental catches of sensitive species by following types of fishing activities:

- (1) turbot fishing with gillnets;
- (2) pelagic species fishing with pelagic trawl;
- (3) rapa whelk fishing with beam trawl;
- (4) pelagic and bottom species fishing with polyvalent active and passive gears.

The impact of commercial fishing on PETs will be assessed according to the bycatch rate, estimated for all observed fishing activities.

The major groups of PETs, that will be observed on board of fishing vessels will include: marine mammals, birds, sharks and rays, sturgeons, vulnerable benthic species.

Additional information on planning the observation of incidental catches of sensitive species (if already filled in in Annex 1.1, please indicate where it can be found):

The scientific observations of vessels of the Bulgarian fishing fleet will cover 100 fishing days:

- 30 days on fishing vessels with gillnets (GNS);
- 30 days on vessels with pelagic trawls (OTM);
- 20 days on vessels with beam trawls (TBB);
- 20 days - on vessels with polyvalent active and passive gears (PMP).

— Has an assessment of the relative risk of bycatch for the different gear types/metiers taken place and been taken into account for the sampling design?

Yes. The assessment was done at national level, since the RCGMed&BS 2021 has planned a workshop to agree at regional level the list of high risk métiers on bycatch by group of sensitive species for 2022. After the workshop the planned list will be revised, if needed.

For the sampling design, the relative risk of bycatch for the different gear types/metiers has been taken into account. The vessels using gillnets (GNS), pelagic trawls (OTM), beam trawls (TBB) and polyvalent active and passive gears (PMP) have priority. The top priorities of the sampling will be:

- Document observations of PETs by different gear types/metiers
- Document catch composition and size, with site specific details and specificity by different

gear types/metiers

- Document the amount and proportion of non-targeted species, and their fate/condition at release

- Document bycatch rate by different gear types/metiers and fishing effort locations

The data collected by scientific observers on board of the following types of fishing vessels - gillnets fishery; pelagic trawlers; beam trawlers; vessels with polyvalent active and passive gears are based on the recommendations of FAO (2019a, b)*:

1. Data about the fishing vessels' activity:

- Fishing expedition data
- Departure port
- Arrival port
- Fishing vessel name
- Vessel type
- Vessel length (m)

2. Fishing gears:

- Total number of fishing efforts per expedition
- Depth scale of the fishing activities

3. Basic biological data:

- Total catch weight (target catch + bycatch)
- Target catch weight
- Weight of the bycatch of marine organisms (including PETs)
- Length structure of catch and bycatch species (including PETs)

4. Additional biological data:

- Total weight of the bycatch of industrial species
- Data about sex and age structure of the catches and bycatches (including PETs, if possible)

For the collected PETs, along with the species identification and biological parameters, additional information will be gathered about the condition of the animals (when possible) :

Dead;

A0: Alive (swam away); conditions not determined;

A1: Alive and in good health condition;

A2: Alive; minor injuries/stressed high probability of survival;

A3: Alive; life threatening injuries/severe stress unlikely to survive.

All gathered data will allow analysis and assessment of the relative risk of bycatch for the different gear types/metiers.

*FAO. 2019a. Monitoring discards in Mediterranean and Black Sea fisheries: Methodology for data collection. FAO Fisheries and Aquaculture Technical Paper No. 639. Rome. <http://www.fao.org/3/ca4914en/ca4914en.pdf>

FAO. 2019b. Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea

— What are the gear types/metiers that present the highest risk of bycatch per species/taxa of PETs in a given region?

- Birds were not presented as bycatch during 2017-2020.
- One cetacean species, harbour porpoise (*Phocoena phocoena*), was caught as bycatch (one specimen) with gillnets in July 2018. Thus, the bycatch rate (specimens/observed days) of harbour porpoise bycatch with GNS was estimated at 0.05 in 2018. Zero bycatches were estimated for 2017 and 2019.
- Two sturgeons' specimens, the beluga sturgeon (*Huso huso*), were collected as bycatch during 2017 - 2018. One specimen was found as bycatch by beam trawling along the northern

shores in August 2017; then, in September 2018, the bycatch (one specimen) resulted in OTM trawling for horse mackerel. The two sturgeons, collected in 2017 - 2018 were alive and were released back into the sea in good condition. The incidence of *H. huso* bycatch (specimens/observed days) was estimated at 0.05 by TBB during 2017, and to 0.1 by OTM in 2018.

- The bycatch of spiny dogfish (*Squalus acanthias*) is found in all types of gears, except in OTMs, but vary between 0.1 and 0.9, with highest levels in GNS.
- The bycatch of stingray, (*Dasyatis pastinaca*) vary between 0.05 -1.85 and is found in all gears, but with the highest rate in GNS fishery.
- The bycatch rate of different PETs vary between the observed gears, but recently the GNS fishery show the high probability to influence PETs.

— What methods are used to calculate the observation effort?

Ideally, sampling fishing trips should be proportional to the fishing effort (number of fishing trips for fleet segments). Thus, the observation effort in the Bulgarian Black Sea, should consider the following basic information:

- Identified major fleet segments (4 major segments, appointed above)
- Total number of active fishing vessels in 2020 is 1 233, but 1 134 of them are from the small-scale fleet (under 12 m) with passive gears only.
- Annual fishing effort for the whole fleet is around 22 000 fishing trips, but 14 000 of them are generated by the small-scale fleet (under 12m) with passive gears only.

Typically, the scientific observation coverage should range from 2 percent to 7 percent (FAO, 2009; ACCOBAMS, 2010), although a minimum level of 0.5 percent is often accepted (FAO 2019 a, 20MARE/2014/19, 2016). A target of 0.5 percent is what might be achieved in some large fisheries monitored under the bycatch monitoring programmes carried out within Regulation (EC) No. 812/2004 (European Union, 2004; Northridge, Kingston and Thomas, 2015).

Taking into account:

- the large role of small scale fishery, with almost 92% fishing vessels with length <12m (most of them, not suitable for scientific observations);
 - the number of vessels with less than 5 fishing days per year is 550,
- we are applying the proposed 0.5 percent as a minimum level of observation coverage in Bulgarian Black Sea waters, and this should result in allocating 100 fishing days per year respectively.

ACCOBAMS. 2010. Protocol for data collection on bycatch and depredation in the ACCOBAMS region. A standardised methodology for use in the collection of data on Cetacean bycatch and depredation of nets. ACCOBAMS-MOP4/2010/Doc22Rev1. Monaco, Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and contiguous Atlantic area. 38 pp.

FAO. 2009. Fishing operations. 2. Best practices to reduce incidental catch of seabirds in capture fisheries. FAO Technical Guidelines for Responsible Fisheries. No. 1, Suppl. 2. Rome, FAO. 2009. 49 pp

FAO (2019a): Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection. FAO Fisheries and Aquaculture Technical Paper No. 640. Rome, FAO <http://www.fao.org/3/ca4991en/CA4991EN.pdf>

FAO (2019b): “Monitoring discards in Mediterranean and Black Sea fisheries: methodology for data collection” ,

MARE/2014/19. 2016. Strengthening regional cooperation in the area of fisheries data collection. Final report to the European Commission on the fishPi project, June. Brussels, Directorate-General for Maritime Affairs and Fisheries (MARE), European Commission.

Northridge, S., Kingston, A. & Thomas, L. 2015. Annual report on the implementation of Council Regulation (EC) No. 812/2004 during 2014. London, Department for Food, Environment and Rural Affairs (Defra). 41 pp.

The PSU is the fishing trip. The observation effort should be up to 0.5% of the average number of fishing trips of the previous years in the sampling stratum.

- Does the sampling design and protocol follow the recommendations from relevant expert groups? Provide appropriate references. If there are no relevant expert groups, the design and protocol have to be explained in the text.

Y

FAO (2019a): “Monitoring discards in Mediterranean and Black Sea fisheries: methodology for data collection” <http://www.fao.org/3/ca4914en/ca4914en.pdf> and at

<http://dcf-bulgaria.bg/data-collection-methodologies/>

FAO (2019b): “Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection” <http://www.fao.org/3/ca4991en/CA4991EN.pdf> and at

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Additional information on observer protocols (if already filled in in Annex 1.1, indicate where it can be found):

The collected data includes the species composition, quantities, biological parameters and condition of the bycatches of PETS by different gears and metiers, as well as total catch of the target species, catches of other industrial species.

The dynamics of the main catches and bycatches of PETs quantities by months and/or seasons, or by sampling localities will be estimated. Information about the bycatch species composition (including PETs), PETs bycatch rate, size; sex and age structure (if possible).

- Does the on-board observer protocol contain a check for rare specimens in the catch at opening of the cod-end? If YES, is the observer instructed to indicate if the cod-end was NOT checked in a haul?

Yes

- In gill nets and hook-and-line fisheries: does the on-board observer protocol instruct the observer to indicate how much of the hauling process has been observed for (large) incidental bycatches that slip out of the net?

Yes

- In large catches: does the protocol instruct the observer to check for rare specimens during sorting of the catch (i.e. at the conveyor belt)? Is the observer instructed to indicate what percentage of the sorting or hauling process has been checked at ‘haul level’?

Yes

Additional information on sampling schemes:

You may add specific contextual information related to a region and the implementation year(s), for instance

highlighting new developments not yet detailed in the quality document, regional adaptation and/or perspectives for the future. Insert the information under the same sampling scheme identifier as in Table 2.5.

NA

Additional description on sampling frames

You may add a complementary description to what includes the 'Sampling frame description' column of Table 2.5. Insert the information under the same identifier and name as in the columns 'Sampling frame identifier' and 'Sampling frame description' of Table 2.5, and in the same order (Sampling frame identifier + Sampling frame description).

NA

(One text box (max. 1 000 words) per region/RFMO/RFO/IO)

Results

Provide additional information, if available, in this text box. For example, summary information on the number of individuals recorded as bycaught per species, gear group and monitoring method with information about the state of the animals (i.e. were they released alive, dead, or collected for sampling).

In 2022, scientific observations of fishing vessels of the Bulgarian fleet covered 100 fishing days – 30 days of vessels with gill nets, 30 days of pelagic trawl vessels, 20 days of beam trawl vessels, and 20 days of polyvalent vessels.

Based on sources: Carpentieri, P.; Nastasi, A.; Sessa, M.; Srour, A.; Eds. 2022. Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: a review. General Fisheries Commission for Mediterranean Region Studies and Review. No. 101. Rome, FAO. <https://doi.org/10.4060/cb5405en>; Golemanski V. et al. (ed.), 2015. Red Book of the Republic of Bulgaria. Volume 2. Animals. BAS & Ministry of Education, Sofia; <http://e-ecodb.bas.bg/rdb/bg/>; and the specific IUCN status of the studied bycatch species in the Bulgarian waters of the Black Sea, we refer seabirds, marine mammals, cartilaginous fish species, turbot, and *Acipenseridae* to the sensitive species group.

1. Observations of the gillnet fishery included two segments: vessels < 6 m (2 vessels, 11 fishing days) and 6–12 m (6 vessels, 19 fishing days). The target catch of the observed gill nets was turbot (*S. maximus*), and the species composition of the bycatch included mainly common stingray (*D. pastinaca*), thornback ray (*R. clavata*), black mussel (*M. galloprovincialis*), shark (*S. acanthias*) and Rapa whelk (*R. venosa*). During this fishing activity, the bycatch ratio of marine mammals, species of *Ph. phocena*; was 0.10 ind/day, and because of its large individual weight, the species has a significant share in the bycatch quantity (11.56%). The total number of sensitive species caught during the entire research period was 36 specimens from four different species (harbor porpoise, shark, common stingray, and thornback ray), with a high mortality rate. In large vessels, a 2-fold increase in the number of sensitive species caught was observed. The highest bycatch rate was recorded for cartilaginous fish, particularly common stingrays, at $T = 0.8$ ind/day.

2. In 2022, research on pelagic trawl fishery focused on sprat catch covered two fishing segments: TM VL1218 (two vessels, four fishing days) and TM VL2440 (five vessels, 26 fishing days). The total number of sensitive species caught in this fishery was nine specimens from three different species (shark, thornback ray, and turbot), and all specimens were caught alive without serious damage. Of the registered sensitive species in bycatch, turbot had the highest bycatch coefficient ($T = 0.23$ ind/day).

3. In 2022, an observation of beam trawl fisheries for Rapa whelk covered a fishing segment, TBB VL1824. A significant number of sensitive species caught in the bycatch were registered, of three different species (common stingray, thornback ray, and turbot). Turbot had the highest share (94%) of the total number of sensitive species in bycatch, with a bycatch coefficient of $T = 7.8$ ind/day. The mortality of sensitive species during this fishing activity is high, and most of them are severely injured or dead.

4. The observation of polyvalent vessels covers two segments, fishing vessels with lengths of 12–18 m (1 vessel, 11 fishing days) and 18–24 m (two vessels, nine fishing days), and takes place in the autumn period of 2022. A total of 97 sensitive specimens were recorded, including common stingrays, thornback rays, sharks, turbot, and sturgeons, and the total number of sensitive species caught in the two fishing segments was comparable. The species of common stingray ($T = 1.7$ ind/day, and thornback ray ($T = 1.2$ /day) had the highest bycatch coefficients. The mortality of sensitive species in bycatch was not high, and when removed from the nets, 90% of all the sensitive species caught were alive and viable.

In 2022, 308 specimens of sensitive species belonging to four main groups were registered in the bycatch, with a dominant presence of turbot (61.7% of the total), followed by cartilaginous fish (36.7%), with a small share of marine mammals of the species *Ph. phocoena* (0.97%), and the *Acipenseridae* family (0.6% of the total number of species). The highest total number of sensitive species, 166 specimens (at 94% turbot share), was recorded in beam trawl fishing. Marine mammals, presented by species *Ph. phocoena* were found only in the bycatch of gillnet fishery, with a bycatch rate of 0.1 ind/day and 100% mortality. Species of the family *Acipenseridae* were found only in the bycatch of polyvalent vessels, with a bycatch coefficient of 0.1 ind/day, but all species caught are alive and released back into the sea. For cartilaginous fish, the total bycatch coefficient was the largest in the fishery with polyvalent vessels, $T = 3.4$ ind/day, and the smallest in the fishery with pelagic trawls, $T = 0.07$ ind/day. The mortality of sensitive species of *Elasmobranchii* was the highest in gill nets (100%) and beam trawls (~ 90%), whereas in polyvalent vessels with pelagic trawls, ~ 90% of these sensitive species were alive and viable. The bycatch rate of turbot was highest in the beam trawl fishery ($T = 7.80$ ind/day).

Deviations from the work plan

The Member State shall list the deviations (if any) in the achieved data collection compared to what was planned in the work plan and explain the reasons for the deviations.

There were no deviations.

Actions to avoid deviations

The Member State shall describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed.

(One text box of max. 1 000 words per region/RFMO/RFO/IO)

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)(d), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004, and Chapter II point 5 of the EU MAP Delegated Decision annex. It is intended to specify data to be collected under Tables 7, 8 and 9 of the EU MAP Delegated Decision annex.

1. Description of clustering

In cases where a fleet segment has less than 10 vessels:

- (a) Clustering may be necessary in order to design the sampling plan and to report economic variables;*
- (b) Member States shall report which fleet segments have been grouped at the national level and shall justify the clustering on the basis of statistical analysis;*
- (c) In their annual report, Member States shall report the number of sampled vessels for each fleet segment regardless of any clustering made to collect or provide the data."*

Clustering should be described, and information should be given on the segments that are clustered.

The Member State should distinguish between segments considered for clustering as follows:

- (a) Important segments with distinct characteristics;*
- (b) Segments similar to other segments;*
- (c) Non-important segments with distinct characteristics.*

Importance of fleet segments should be assessed in terms of landings (value and volume) and/or effort. Similarity should be demonstrated using expert knowledge on fishing patterns or on available data on landings and/or effort.

For each of the cases described, the Member State should apply the following approaches for clustering according to the different characteristics of fleet segments:

- (a) Important segments with distinct characteristics*
- (b) Such segments should not be clustered unless strictly necessary in data reporting for confidentiality reasons. Data should be separately collected for these segments and included in national totals (unless separate identification is then made possible as a consequence).*
- (c) Segments similar to other segments*
- (d) Such segments can be clustered for sampling purposes, as well as for confidentiality reasons. The segments merged should be selected according to criteria that should be fully explained and justified by the Member State. In particular, the approach to determine similarity should be clearly described by the Member State.*
- (e) Non-important segments with distinct characteristics*
- (f) Such segments can be clustered for sampling purposes, as well as for confidentiality reasons. These segments can be merged with other non-important segments. Clustering of these segments with other important segments should be avoided. The Member State should explain how the lower importance had been determined and for which reasons the clustered segments have been selected. Clusters should be named after the biggest segment in terms of number of vessels or economic significance.*

NA. The data collection scheme used in Bulgaria is Census and the data is collected from each vessel. Clusters are not used for data collection purposes, but for the reporting of economic and social data from segments with less than 5 vessels.

The clustering is based on the aggregation of segments with a fishing technique similar to other segments.

Clustered Segments:

*- Drift and/or fixed netters 12-< 18 m**

This Cluster is composed of the segments Drift and/or fixed netters 24-< 18 m (3 vessels) and Drift and/or fixed netters 24-< 40 m (1 vessel), which are with less than 5 vessels, and the segment Drift and/or fixed netters 12-< 18 m (19 vessels). These fleet segments only differ in the length class.

*- Vessels using Pots and/or traps 6-< 12 m**

This Cluster is composed of the segment Vessels using Pots and/or traps 0-< 6 m (3 vessels), which is with less than 5 vessels, and the segment Vessels using Pots and/or traps 6-< 12 m (34 Vessels). These fleet segments only differ in the length class.

- Vessels using hooks 6-< 12 m*

This Cluster is composed of the segment Vessels using hooks 12-< 18 m (1 vessel), which is with less than 5 vessels, and the segment Vessels using hooks 6-< 12 m (24 vessels). These fleet segments only differ in the length class.

- Vessels using Polyvalent “passive” gears only 6-< 12 m*

This Cluster is composed of the segment Vessels using Polyvalent “passive” gears only 12-< 18 m (1 Vessel), which is with less than 5 vessels, and the segment Vessels using Polyvalent “passive” gears only 6-< 12 m (9 vessels). These fleet segments only differ in the length class.

- Vessels using active and passive gears 12-< 18 m*

This Cluster is composed of the segment Vessels using active and passive gears 18-< 24 m (3 vessels), which is with less than 5 vessels, and the segment Vessels using active and passive gears 12-< 18 m (14 vessels). These fleet segments only differ in the length class.

- Purse seiners 0-< 6 m*

This Cluster is composed of the segment Purse seiners 6-< 12 m (3 vessels), which is with less than 5 vessels, and the segment Purse seiners 0-< 6 m (8 vessels). These fleet segments only differ in the length class.

- Pelagic trawlers 12-< 18 m*

This Cluster is composed of the segments Beam trawlers 12-< 18 m (1 vessel) and Pelagic trawlers 6-< 12 m (3 vessels), which are with less than 5 vessels, and the segment Pelagic trawlers 12-< 18 m (21 vessels). These fleet segments are clustered because of similar fishing techniques and similar length classes.

- Inactive vessels 12-< 18 m*

This Cluster is composed of the segment Inactive vessels 18-< 24 m (1 vessel), which is with less than 5 vessels, and the segment Inactive vessels 12-< 18 m (8 vessels). These fleet segments only differ in the length class.

2. Description of activity indicator

If the Member State is using an activity indicator to divide the fleet segment into different activity levels, use 'L' for the low activity vessels and 'A' for the normal economic activity vessels. Please provide a description of the activity methodology used.

NA. The activity indicator to divide the fleet segment into different activity levels is not used in Bulgaria.

3. Deviation from the RCG ECON (ex. PGECON) definitions

Describe and justify any deviations from variable definitions as listed in the 'EU MAP Guidance Document' on the DCF website.

In case the PIM is not used, explain and justify the application of alternative methods.

NA. No deviation from RCG ECON definitions. According to the GUIDANCE DOCUMENT FOR THE FISHING FLEET Living document, last updated by PGECON 2020, Alternative methods based on company surveys are allowed for the variables Consumption of physical capital and Value of physical capital. Both variables, Consumption of fixed capital and Value of physical capital are collected through the annual questionnaire as the other economic variables, instead of estimating them by applying the perpetual inventory method (PIM). The reason is that the values derived by the application of PIM were not realistic for the Bulgarian fleet and since the data collection is covering all the vessels (Census) and each owner is providing the most accurate data regarding the specific vessel, at national level was taken a decision of using the realistic values reported by the owners, instead of the estimated theoretical numbers.

(max. 900 words)

Deviations from the work plan

List the changes from the work plan (if any) and explain the reasons.

In 2021 there are no vessels in the segments Vessels using Pots and/or traps 0-< 6 m* and Vessels using hooks 12-< 18 m* which are listed in the Work plan. There were 2 new segments, which were not listed in the Work plan tables: Beam trawlers 6-<12 m* and Beam trawlers 18-< 24 m*.

This segment Beam trawlers 12-< 18 m* was planned to be clustered with Pelagic trawlers 12-18, because there wasn't more relevant segment in 2020, but since there were 2 vessels for 2021 and two additional TBB segments, for reporting the Beam trawlers 12-< 18 m* cluster will be used to represent the 3 segments: TBB VL0612, TBB VL1218 and TBB VL1824, because it is better if TBB segment is clustered with other TBB segments (these 3 segments are using the same fishing technique). The cluster name from cell H23 will not be used for reporting, but it is not amended because it is from the WP. The new segments are added in tables 5.1 and 5.2 in grey at the bottom of the tables, below the data from the accepted Work plan.

Actions to avoid deviations

Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed. We collect economic and social data from each vessel and the achieved sample rate is 100%. Clusters are not used for data collection, but for the reporting of economic and social data from segments with less than 5 vessels.

(max. 900 words)

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.

1. Description of the threshold application

Please provide a percentage for the Member State's production from the latest EU aquaculture production reported to Eurostat. Describe and justify the applied threshold(s).

NA. No threshold is applied. The Bulgarian aquaculture production represents 1.07% of the EU aquaculture, according to the latest EU aquaculture production reported by EUROSTAT. The data collection scheme for the aquaculture enterprises in Bulgaria is Census and the sampling unit is an aquaculture enterprise. The economic and social data collection under DCF is from crucial importance in Bulgaria and it is used not only for answering to the aquaculture data call, but also for different national purposes. The data collection is according to the national legislation and it is not subject to any financial costs.

2. Deviation from the RCG ECON (ex. PGECON) definitions

Describe and justify any deviations from variable definitions as listed in 'EU MAP Guidance Document' in the DCF website.

NA. No deviation from RCG ECON definitions.

(max. 900 words)

Deviations from the work plan

List the changes from the work plan (if any) and explain the reasons.

There were no deviations from the work plan.

Actions to avoid deviations

Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed.

(max. 900 words)

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.

1. The Member State should provide justification for complementary data collection for fish processing in addition to Eurostat data.

The data on fish processing sector is collected to cover all variables agreed at RCG ECON and for continuation and consistency of time series. The economic and social data collection under DCF is from crucial importance in Bulgaria and it is used not only for answering to the processing data call, but also for different national purposes. The data collection is according to the national legislation and it is not subject to any financial costs. The data collection scheme for the processing enterprises in Bulgaria is Census and the sampling unit is a fish processing enterprise. According to the national legislation (Art. 27a from Fisheries and Aquaculture Act), each owner of processing enterprise which is in the register of the BFSA, or his representative, is required at the beginning of each year (before January 31) to submit economic and social information for the previous year.

2. Deviation from the RCG ECON (ex. PGECON) definitions

Describe and justify any deviations from variable definitions as listed in 'EU MAP Guidance Document' in the DCF website.

NA. No deviation from RCG ECON definitions.

(max. 900 words)

Deviations from the work plan

List the changes from work plan (if any) and explain the reasons.

There were no deviations from the work plan. In the segment ≥ 250 there were no enterprises during the preparation of the WP and during the AR reference year. If enterprises appear in the segment during the implementation years of the WP the data will be collected and reported.

Actions to avoid deviations

Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.

No action needed.

(max. 900 words)

ANNEX 1.1 - QUALITY REPORT FOR BIOLOGICAL DATA SAMPLING SCHEME

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. Provide short descriptions where indicated, even if the documentation can be found in English. 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. For 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'.

(Sampling scheme identifier: PTSBS)

MS : Bulgaria
Region: Mediterranean and Black Sea
Sampling scheme identifier: PTSBS
Sampling scheme type: Research survey at sea
Observation type: SciObsAtSea
Time period of validity: from 2022 to 2024
Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i> Pelagic Trawl survey will be accomplished in June - July and October - November each year. The research survey will be held in the area enclosed between Durankulak and Ahtopol (Bulgaria) with a total length of the coastline of 370 km. The study area encloses waters between 42°05' and 43°45' N and 27°55 and 29°55 E. Bulgarian Black Sea waters will be partitioned into 128 equal in size, not overlying fields and during each survey (spring and autumn) 36 random mid-water hauls will be carried out in the Bulgarian area, 72 hauls in total per year. The survey covers the Bulgarian Black Sea waters.
Description of the population
Population targeted: Specify which are the primary sampling units (PSU), <i>e.g. all national port*days (information present in former Table 4B).</i> For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area. The main targeted species is sprat (<i>Sprattus sprattus</i>). According to the list of species caught during the previous pelagic trawl surveys, an analysis of the biomass and abundance of red mullet, anchovy and Mediterranean horse mackerel will also be done, if they exist in the catch. The survey area is the Bulgarian Black Sea waters. Population sampled: Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being</i>

listed as auctions excluding all minor ports and no sampling during the week-ends. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

The PTSBS is targeting sprat and other pelagic species in the Black Sea, but in general, all the species which exist in the catch are recorded and assessed.

Stratification: Explain the logic taken to stratify the population and the number of strata generated, *e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

To address the research objectives, the region was divided into the following strata according to depth – Stratum 1 (15-35 m), Stratum 2 (35–50 m), Stratum 3 (50–100 m). The stratification is based on scientific experience and historical pelagic trawl surveys.

Sampling design and protocols

Sampling design description: Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

To establish the abundance of the reference species in front of the Bulgarian coast a standard methodology for stratified sampling was used (Gulland, 1966;). To address the research objectives the region was divided into four strata according to depth – Stratum 1 (15-35 m) Stratum 2 (35–50 m), Stratum 3 (50–100 m). Each field is a rectangle with sides 5' Lat × 5' Long and area around 62.58 km² (measured by application of GIS), large enough for a standard lug extent in a meridian direction to fit within the field boundaries. At each of the fields, only one haul with a duration between 30-40 min at speed 2.7-2.9 knots will be carried out. The research survey includes all fractions of catch.

The length classes regarding the stomach content analysis of sprat described in the STREAM deliverable 4.1 will be used (<8 cm and >8 cm). 100 full stomachs will be analysed from sprat <8 cm and 100 full stomachs of sprat over 8 cm. The length classes of Mediterranean horse mackerel described in the STREAM deliverable 4.1 will be used (<10 cm and >10 cm). 50 full stomachs will be analysed from Mediterranean horse mackerel <10 cm and 50 full stomachs of Mediterranean horse mackerel >10 cm. The numbers are agreed between Bulgaria and Romania.

The main reference documents are:

Deliverable D4.1 from STREAM

Methodology for the pelagic trawl survey in the Bulgarian Black Sea area

Both documents are available at <http://dcf-bulgaria.bg/data-collection-methodologies/>

Is the sampling design compliant with the 4S principle?: Y/N/NA (NA for *e.g.* surveys and diadromous and recreational sampling schemes) NA

Regional coordination: Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all Member States participating.

The sampling design and protocols were not developed as part of a regional or multi-lateral agreement, but according to the agreement between Bulgaria and Romania, both countries will undertake annually research surveys in their territorial waters and EEZ under their jurisdiction, following common methodology, harmonization of biological data sampling and analysis and harmonization of stock assessment methods. The results from the pelagic trawl survey are presented during the MEDIAS meeting and all relevant GFCM data preparation meetings and stock assessment meetings.

Link to sampling design documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide some details in the textbox.

The sampling design documentation is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Compliance with international recommendations: Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y. The sampling design is in line with international recommendations.

Link to sampling protocol documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

The sampling protocol documentation is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Compliance with international recommendations: Enter 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y. The sampling protocol is in line with international recommendations.

Sampling implementation

Recording of refusal rate: Indicate 'Y' (yes), 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

Monitoring of sampling progress within the sampling year: Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

The number of stations could vary depending on the specific adjustments related to the increase of the number of hauls in specific areas depending on currents, hydrometeorological conditions at the local station etc.

Data capture

Means of data capture: short description (+ photo optionally). Indicate what the means for collecting the data are, e.g. scales, measuring board, dedicated software etc.

Part of the available measuring instruments and software used in IO-BAS (responsible for the pelagic trawl survey) are:

KERN ALJ-160-4NM: Ioniser to neutralise electrostatic charge for fixed installation in the analytical balance;

6inch 150mm Electronic Digital Caliper Ruler Carbon Fiber Vernier;

CX31 Upright Microscope+ digital camera USB3.0;

Kern CH 50K100 Hanging Scales 50kg;

Olympus CX 31RTSF-6 microscope;

MATLAB. Version 2020a, Computer Software. MATLAB – MathWorks, The Math Works, Inc. (2020);

RStudio: Integrated Development for R. RStudio, PBC, Boston, MA URL RStudio | Open source & professional software for data science teams. RStudio Team (2020);

Participatory Fisheries Stock Assessment (ParFish) Software;

Yield Version 1.0;

The Catch Effort Data Analysis package (CEDA);

The Length Frequency Distribution Analysis (LFDA);

XLSTAT.



The data recorded and samples collected at each haul include (Gulland,1966):

- Depth, measured by the vessel's echo sounder
- GPS coordinates of start/end haul points
- Haul duration
- An abundance of sprat caught
- Weight of total sprat catch
- Abundance and weight of other large species
- Species composition of by-catch

Laboratory analyses

The samples collected onboard were processed in a laboratory for the determination of age and food composition.

The age will be established in otoliths under the binocular microscope.

The food spectrum will be determined by the separation of the stomach contents into taxonomic groups identified to the lowest possible level.

4% Formaldehyde solution with marine water is used for the conservation of sprat for stomach content examination.

Statistical analyses

Swept area method - the method is based on trawling across the seafloor (area swept), weighted with chains, rock-hopper, and roller gear, or steel beams. Widely used a direct method for demersal species stock assessment (Foote,1996).

<http://io-bas.bg/en/biological-laboratories/>

Data capture documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

The data capture documentation is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Quality checks documentation: Indicate 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

Y. IO-BAS followed internal rules adopted in the institute to meet the quality of the data processed and analysed. The following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/> describes these rules adopted in the IO-BAS:

Methodology for the Pelagic trawl survey in the Bulgarian Black Sea area;

Guidelines on Data Quality Assurance and Data Quality Control - (Example has been given with the anchovy with remark that all measures proposed are valid for all small pelagic species in Bulgarian marine area);

GFCM-DCRF-manual;

Best practice guideline on scientific surveys and holistic methods in the Black Sea;

Manual of protocols on methods used for assessing fish stocks in the Black Sea by analytic methods;

Technical guidelines for scientific surveys in the Mediterranean and the Black Sea.

Data storage

National database: Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA. The raw data and the relevant datasets are stored by the Institute of Oceanology. Their database is not accessible through a website.

International database: Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The data collected during the pelagic trawl survey is available in the GFCM-DCFR platform and JRC databases.

Quality checks and data validation documentation: Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Information for the already validated data by GFCM is available at <https://www.fao.org/gfcm/data/safs>

Sample storage

Storage description: Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Hard parts as otoliths are preserved at the time of age reading by 3 independent readers. Stomach and zooplankton samples are stored in the zooplankton laboratory (4% Formaldehyde solution) at the Institute of Oceanology-BAS premises.

Sample analysis: Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, expert group's reports and protocols) if adequate, where information on the processing of the samples is provided.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Data processing

Evaluation of data accuracy (bias and precision): Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Y. The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Editing and imputation methods: Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Y. Editing and imputation documentation is available in the Institute of oceanology, which is conducting the pelagic trawl survey. At IO-BAS editing and imputation of the technical and scientific reports are performed by 4 members of the scientific team.

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

The only document with DOI, which we are using as reference is the Technical guidelines for scientific surveys in the Mediterranean and the Black Sea. - FAO Fisheries and Aquaculture Technical Papers No. 641. <https://doi.org/10.4060/ca8870en>. The rest of the documents do not have a digital object identifier.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Validation of the final dataset: How are datasets validated (quality checked) before providing to end-user?

R software checks and BioIndex checks, so all stages of work are validated:

Running and interpreting scripts developed in R on sampling optimization;

Running quality checks on datasets and interpreting outputs in R;

Running programme BioIndex with output result;

Participation in GFCM and MEDIAS meetings for data preparation and analysis of data from pelagic trawl surveys in the Black Sea.

AR comment: Indicate any deviations. Do not change the text already adopted in the work plan.

There were no deviations.

Sampling scheme identifier: BTSBS

MS : BGR
Region: Mediterranean and Black Sea
Sampling scheme identifier: BTSBS
Sampling scheme type: Research survey at sea
Observation type: SciObsAtSea
Time period of validity: from 2022 to 2024
Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i> The bottom trawl survey will be conducted in May-June and November-December each year. To establish the abundance and biomass of turbot, piked dogfish and whiting a standard methodology for stratified sampling (Gulland, 1966; Sparre, Venema, 1998;) will be applied. Bulgarian waters will be partitioned into 143 equal in size, not overlying fields and during each survey (spring and autumn) 36 random mid-water hauls will be carried out in the Bulgarian area, 72 hauls in total per year. The research survey covers the Bulgarian Black Sea waters.
Description of the population
Population targeted: Specify which are the primary sampling units (PSU), <i>e.g. all national port*days (information present in former Table 4B).</i> For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area. The target species for the BTSBS are: • Turbot (<i>Scophthalmus maximus</i>) – all available catch during the survey; • Spiny dogfish (<i>Squalus acanthias</i>) - all available catch (rare occurrence); • Whiting (<i>Merlangius merlangus</i>) - ichthyological samples will be taken from random hauls The bycatch species (like the thornback ray (<i>Raja clavata</i>) and the European flounder (<i>Platichthys flesus</i>)) will be measured and analysed. All the species which are caught during the BTSBS will also be analysed. The research survey area is the Bulgarian Black Sea coast. Population sampled: Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends.</i> For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys. The main target species from the BTSBS are the demersal species turbot (<i>Scophthalmus maximus</i>), whiting and piked dogfish, as well as information for all species, gathered as bycatch, during the survey. Stratification: Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i> To establish the abundance and biomass of the reference species of the Bulgarian Black Sea

coast, a standard methodology for stratified sampling (Gulland, 1966; Sparre, Venema, 1998) will be applied.

The surveyed region will be divided into four strata, depending on the depth – Stratum 1 (15-35 m), Stratum 2 (35-50 m), Stratum 3 (50-75 m) and Stratum 4 (75-100 m). For assessment of turbot, whiting and piked dogfish abundance and biomass, the surveyed territory will be divided into 143 squares. The sampling will be carried out at 36 randomly chosen fields (rectangles) in the spring and 36 in autumn, situated at a depth between 15-100 m. Each rectangle is with sides 5'Lat × 5'Long, while the total area is 62.58 km² (measured by GIS). Each field will be marked with letters and digits for better distinction.

The seabed area covered during a single haul represents a basic measurement unit, considered representative, as turbot do not aggregate in dense assemblages (Martino, Karapetkova, 1957).

Sampling design and protocols

Sampling design description: Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Full coverage of the information is envisaged for all collected specimens of the target species - absolute and standard length, the weight of specimens, otoliths for age determination, turbot stomachs for stomach content analysis, and by-catch species composition.

The stomach composition data will be analyzed for as much as possible full stomachs, but we could not assure strict distribution of the collected samples by fish length classes. The minimum which is planned (according to numbers of specimens with full stomachs during the historical bottom trawl surveys) is 15 in the 2nd quarter and 15 in the 4th quarter. The number is agreed between Bulgaria and Romania. If more full stomachs are available during the research surveys, they will be analysed.

The main reference documents are:

Deliverable D4.1 from STREAM

Methodology for the Bottom trawl survey in the Bulgarian Black Sea area

Both documents are available at <http://dcf-bulgaria.bg/data-collection-methodologies/>

Selected species/stocks were added in the Sampling scheme identifier to be consistent with Table 2.2, Table 2.5, Text box 2.5 and Annex 1.1.

For the other demersal species – weight and length measurements will be performed on all catches (if possible the sex and age of the bycatch species will be estimated).

Is the sampling design compliant with the 4S principle?: Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes) NA

Regional coordination: Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all Member States participating.

The sampling design and protocols were not developed as part of a regional or multi-lateral agreement, but according to the agreement between Bulgaria and Romania, both countries will undertake annually research surveys in their territorial waters and EEZ under their jurisdiction, following common methodology, harmonization of biological data sampling and analysis and harmonization of stock assessment methods. The results from the bottom trawl survey are presented during the MEDITS meeting and all relevant GFCM data preparation meetings and stock assessment meetings.

Link to sampling design documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide some details in the

textbox.

The sampling design documentation is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Compliance with international recommendations: Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y. The sampling design is in line with international recommendations.

Link to sampling protocol documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

The sampling protocol documentation is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Compliance with international recommendations: Enter 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y. The sampling protocol is in line with international recommendations.

Sampling implementation

Recording of refusal rate: Indicate 'Y' (yes), 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

Monitoring of sampling progress within the sampling year: Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

The number of stations could vary depending on the specific adjustments related to the increase of the number of hauls in specific areas depending on currents, hydrometeorological conditions at the local station etc.

Data capture

Means of data capture: short description (+ photo optionally). Indicate what the means for collecting the data are, e.g. scales, measuring board, dedicated software etc.

Part of the available measuring instruments and software used in IFR (responsible for bottom trawl survey) are:

Precision scale Kern KB 360-3N, 360 g, Precision: 0.001 g;

Precision scale Kern KB 3600-2N, 3600 g, Precision: 0.01 g;

Scales with hook Kern HDB 5K5N, 5 kg;

Scales with hook Kern HDB 10K10N 10 kg;

LAB13_10447197- Stereo microscope Leica EZ 4;

Stereo microscope OLIMPUS SZ51;

Stereo microscope OLIMPUS SZ61;

Statistical program for fish parameters calculation and stomach content analysis:

The Catch Effort Data Analysis package (CEDA);

The Length Frequency Distribution Analysis (LFDA);

Yield Version 1.0;

FiSAT (FiSAT II);

PRIMER;

XLSTAT.



To ensure accurate measurements, the laboratory and sea equipment should be kept in good condition, scales and microscopes should be regularly calibrated and checked (preferably yearly by a qualified technician).

The sea protocols for each sample include a full description of all measurements. IFR-Varna keeps the protocols from the observations in xls files. All biological data, produced in a sea and laboratory, should be completely documented and should be traceable back to its origin. The necessary documentation contains a description of sampling equipment and procedures, reference to standard operating procedures (SOP) for sample handling and analytical procedures involved. Data files are kept on several devices and are updated synchronously.



The catch from all hauls must be fully sorted where practicable. The entire catch is sorted, with fish, shellfish species identified to the lowest taxonomic level possible. For larger catches, a selection of species/size categories of species may be identified as being sufficiently abundant that they can be subsampled appropriately. All fish from target and demersal bycatch species will be measured (length, weight by sex).

Data capture documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Internal rules for Data Quality Control (DQC) and Data Quality Assurance (DQA) are applied in IFR, including all steps of marine data collection and analysis – from the planning of the sea expedition to final reporting. For example, all data, collected in the sea, are included in protocols and checked by two different persons for mistakes (scientist and expedition leader) and all samples are numbered and identified by given rules. If any corrections are needed, they are presented in separate protocols, controlled by two scientists.

Scientific data are kept in the form of xls files, as specific technical reports are prepared every six months and on yearly basis, regarding the evolution of the main parameters of the stock, biomass assessments, catch projections, size, age composition, maturity, physical condition etc. and are kept on two different computers, with copies on CD and flash memories.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Quality checks documentation: Indicate 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

Y. IFR followed internal rules adopted in the institute to meet the quality of the data processed and analysed. The following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/> describes these rules adopted in the IFR:

Methodology for the Bottom trawl survey in the Bulgarian Black Sea area;

Guidelines on Data Quality Assurance and Data Quality Control;

GFCM-DCRF-manual;

Best practice guideline on scientific surveys and holistic methods in the Black Sea;

Manual of protocols on methods used for assessing fish stocks in the Black Sea by analytic methods;

Technical guidelines for scientific surveys in the Mediterranean and the Black Sea.

Data storage

National database: Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA. The raw data and the relevant datasets are stored by the Institute of fish resources. Their database is not accessible through a website.

International database: Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The data collected during the bottom trawl survey is available in the GFCM-DCRF platform and JRC databases.

Quality checks and data validation documentation: Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Information for the already validated data by GFCM-DCRF is available at <https://www.fao.org/gfcm/data/safs>

Sample storage

Storage description: Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

The hard structures - otoliths, for age readings, are stored for 2 years in the IFR - Varna.

In general, the internal protocols for age reading in IFR include standard procedures for:

- otoliths sampling (stratified by size range, season, sex, etc.);
- preparation for analysis (sections, clarifying mediums, etc.);
- otoliths reading (image-analysis systems, filters, lighting, magnification, etc.);

- establishing accuracy and precision.
- sample storage.

Sample analysis: Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, expert group's reports and protocols) if adequate, where information on the processing of the samples is provided.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/> and [https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20\(CRR\)/CRR%20346.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20(CRR)/CRR%20346.pdf)

Data processing

Evaluation of data accuracy (bias and precision): Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Y. <http://dcf-bulgaria.bg/data-collection-methodologies/>

Editing and imputation methods: Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Y. Editing and imputation documentation is available in the Institute of fish resources, which is conducting the bottom trawl survey. At IFR editing and imputation of the technical and scientific reports are approved by two different persons (scientist and expedition leader).

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

The only document with DOI, which we are using as reference is the Technical guidelines for scientific surveys in the Mediterranean and the Black Sea. - FAO Fisheries and Aquaculture Technical Papers No. 641. <https://doi.org/10.4060/ca8870en>. The rest of the documents do not have digital object identifier.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Validation of the final dataset: How are datasets validated (quality checked) before providing to end-user?

For the Data quality checks of the research survey, IFR-Varna uses MEDITS protocol. It includes common formats for data storage, which include the following standard files: TA (data on the technical specifications of the hauls), TB (aggregated data on the total number and weight by species), TC (aggregated data of the frequency distribution by length, sex and maturity stage by species). To perform automatically the data check procedure by means of a routine enabling errors to be detected and facilitating their correction, the RoME routine, an R code for performing multiple and cross-checks on survey data in TA, TB, TC format. RoME was transformed into a package structured in 55 different functions: the run is performed by means of the function RoME. Each function is related to a specific check and is recalled in a specific order to avoid cascade errors.

Running programme BioIndex with output result: maps and tables that include data related to: * the surface of the researched square (Km², m²); * the average mass per unit area (g/m², t/Km²); * the mass limits variation per unit area; * the total biomass values (t); * the abundance index (individuals/km²).

Participation in GFCM and MEDITS meetings for data preparation and analysis of data from demersal trawl surveys in the Black Sea.

AR comment: Indicate any deviations. Do not change the text already adopted in the work plan.
There were no deviations.

Sampling scheme identifier: SciObsOnShore*Commercial fishing trip*Selected species/stocks

MS : BGR
Region: Mediterranean and Black Sea
Sampling scheme identifier: SciObsOnShore*Commercial fishing trip*Selected species/stocks
Sampling scheme type: Commercial fishing trip
Observation type: SciObsOnShore
Time period of validity: from 2022 until 2024
Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i> The sampling scheme aiming to collect the following information from commercial landings at national ports: - length, weight, sex, age, maturity, fecundity and stomach sampling of <i>Scophthalmus maximus</i> collected from vessels using GNS for turbot fisheries in GSA 29, which are landing at officially designated ports for turbot; - length, weight, sex, age, maturity and fecundity for <i>Sprattus sprattus</i>, <i>Mullus barbatus</i>, <i>Trachurus mediterraneus</i>, <i>Engraulis encrasicolus</i>, <i>Merlangius merlangius</i> from vessels using OTM, targeting pelagic species; - length, weight, sex and maturity for <i>Squalus acanthias</i> from vessels using LLS and/or LLD; - length, weight and sex for <i>Rapana Venosa</i> from vessels using TBB targeting rapa whelk. The scheme covers Bulgarian landings at national ports.
Description of the population
Population targeted: Specify which are the primary sampling units (PSU), <i>e.g. all national port*days (information present in former Table 4B).</i> For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area. The primary sampling units are commercial fishing trips. The samples for the analysis will be collected directly from the Bulgarian landing ports. The sampling will remain the same as in previous years – it will be done by purchasing samples at the time of landings at the ports. The target population consists of fishing trips of vessels using pelagic trawls, vessels using beam trawls, vessels using longlines and vessels with set (anchored) gillnets for turbot. Population sampled: Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends.</i> For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys. All parts of the target population have the same chance to be sampled and there are no parts of the target population, which are unreachable for sampling or excluded for some reason. The samples collection will be carried out quarterly.

The method of PSU selection will be simple random sampling without replacement (SRSWOR)

<http://home.iitk.ac.in/~shalab/sampling/chapter2-sampling-simple-random-sampling.pdf>

Stratification: Explain the logic taken to stratify the population and the number of strata generated, e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.

There is no specific geographical stratification since the PSU is a commercial fishing trip.

Sampling design and protocols

Sampling design description: Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

To ensure that the data collected provides representative information, samples from the planned species are collected from different landing ports of the Bulgarian Black Sea coast. Each fishing vessel, which is landing at the port during the day in which the data collector is there has an equal and independent probability of being observed. The sampling scheme applies for catch fraction based on Landings (all).

The method of PSU selection is simple random sampling with replacement (SRSWR)

<http://home.iitk.ac.in/~shalab/sampling/chapter2-sampling-simple-random-sampling.pdf>

The minimum number of full stomachs of turbot which is planned (according to numbers of specimens with full stomachs during the historical biological monitoring of turbot) is 20 in the 2nd quarter and 15 in the 4th quarter. If more full stomachs are available from the purchased samples, they will be analysed.

The main reference documents are:

Deliverable D4.1 from STREAM

Methodologies for the biological sampling in the Bulgarian Black Sea area

Both documents are available at <http://dcf-bulgaria.bg/data-collection-methodologies/>

Is the sampling design compliant with the 4S principle?: Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

Y

Regional coordination: Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all Member States participating.

The sampling design and protocols were not developed as part of a regional or multi-lateral agreement, but according to the agreement between Bulgaria and Romania, both countries will undertake annually biological monitoring in their territorial waters and EEZ under their jurisdiction, following common methodology and harmonization of biological data sampling.

The agreement is available at the following link: <http://dcf-bulgaria.bg/wp-content/uploads/2021/10/Agreement-on-data-collection-activities-between-Bulgaria-and-Romania-2021-2027.pdf>

Link to sampling design documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide some details in the textbox.

The sampling design documentation is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

and

"Report of the Workshop on Sampling and Calculation Methodology for Fisheries Data" (WKSCMFD) (ICES 2004);

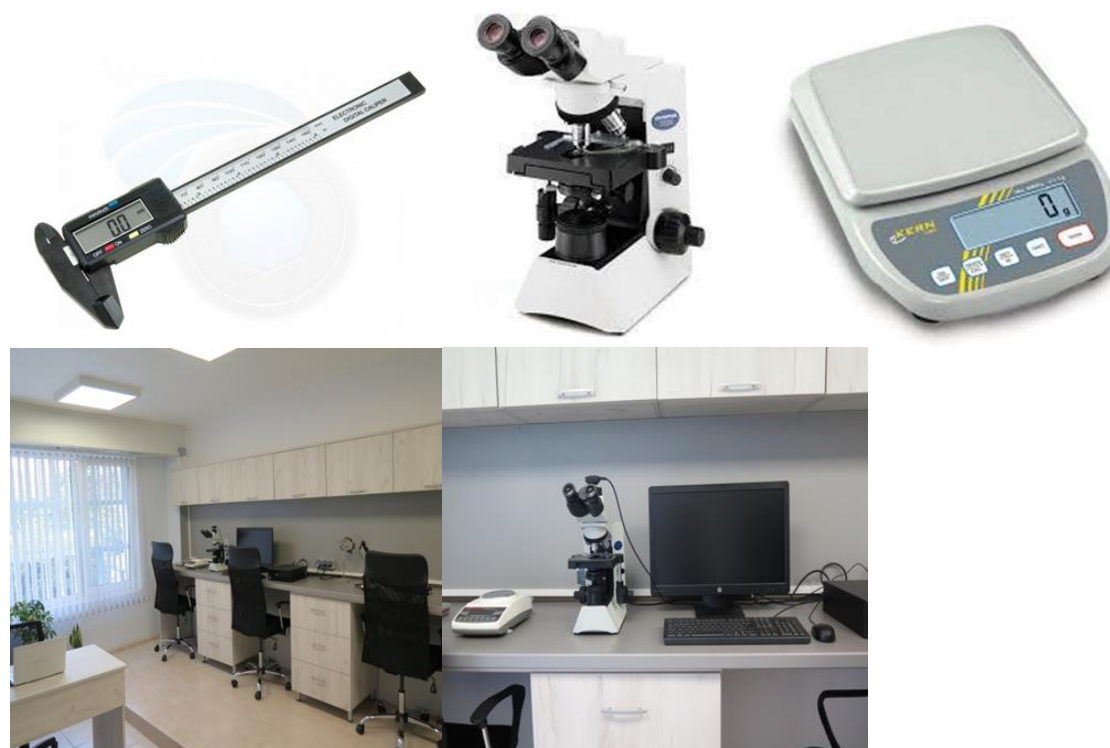
https://www.ices.dk/sites/pub/CM%20Documents/2004/ACFM/ACFM1204.pdf Report SGPIDS (ICES, 2011a), https://www.ices.dk/community/Documents/PGCCDBS/SGPIDS%202011.pdf Report of the Study Group on Practical Implementation of Discard Samples (SGPIDS).2013, https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2013/SGPIDS/SGPIDS13.1.pdf
Compliance with international recommendations: Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators. Y. The sampling design is in line with international recommendations. Link to sampling protocol documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox. The sampling protocol documentation is available on the following link: http://dcf-bulgaria.bg/data-collection-methodologies/ Compliance with international recommendations: Enter 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators. Y.
Sampling implementation Recording of refusal rate: Indicate 'Y' (yes), 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available. Y. The refusal rate should be recorded, but it is not likely to happen because scientists are buying the samples. Monitoring of sampling progress within the sampling year: Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year? Annual plans for the collection of samples from the commercial fisheries are prepared in each institute responsible for the pelagic species (IO-BAS), turbot (IFA) and rapa whelk (IFR). So far we did not have a situation in which the sampling allocations needed to be adjusted.
Data capture Means of data capture: short description (+ photo optionally). Indicate what the means for collecting the data are, e.g. scales, measuring board, dedicated software etc. The biological monitoring is performed by three different institutes, so their means for data collection are various, but below you can find a short list for each institute. Part of the available measuring instruments and software used in IFR (responsible for the rapa whelk monitoring) are: Precision scale Kern KB 360-3N, 360 g, Precision: 0.001 g; Precision scale Kern KB 3600-2N, 3600 g, Precision: 0.01 g; Scales with hook Kern HDB 5K5N, 5 kg; Scales with hook Kern HDB 10K10N 10 kg; LAB13_10447197- Stereo microscope Leica EZ 4; Stereo microscope OLIMPUS SZ51; Stereo microscope OLIMPUS SZ61;

Part of the statistical programs used in the Institute:
 The Catch Effort Data Analysis package (CEDA);
 The Length Frequency Distribution Analysis (LFDA);
 Yield Version 1.0;
 FiSAT (FiSAT II);
 PRIMER;
 XLSTAT.



Part of the available measuring instruments and software used in IO-BAS (responsible for the monitoring of pelagic species) are:
 KERN ALJ-160-4NM: Ioniser to neutralise electrostatic charge for fixed installation in the analytical balance;
 6inch 150mm Electronic Digital Caliper Ruler Carbon Fiber Vernier;
 CX31 Upright Microscope+ digital camera USB3.0;
 Kern CH 50K100 Hanging Scales 50kg;
 Olympus CX 31RTSF-6 microscope;

MATLAB – MathWorks - The Math Works, Inc. (2020). MATLAB. Version 2020a;
 RStudio: Integrated Development for R. RStudio, PBC, Boston, MA URL RStudio | Open source & professional software for data science teams, RStudio Team (2020);
 Participatory Fisheries Stock Assessment (ParFish) Software;
 Yield Version 1.0;
 The Catch Effort Data Analysis package (CEDA);
 The Length Frequency Distribution Analysis (LFDA);
 XLSTAT.



<http://io-bas.bg/en/biological-laboratories/>

Part of the available measuring instruments and software used in IFA (responsible for the monitoring of turbot) are:

Digital balance Kern AEG (min-0.01 g; max-220 g; e=0.001 g;

binocular stereomicroscope (Ceti model);

trinocular microscope model MAGNUM T;

Growth II Pisces Conservation Ltd. 2006.

Detailed information for the means for collecting the data is available in the Methodology for biological sampling in the Bulgarian Black Sea area document, available at <http://dcf-bulgaria.bg/data-collection-methodologies/>.

To ensure accurate measurements, the laboratories equipment in each of the 3 institutes is kept in good condition, scales are regularly calibrated and checked by a qualified technician. The laboratory protocols for each sample include a full description of all measurements. All biological data, collected at landing ports or in the laboratory is completely documented and should be traceable back to its origin. The documentation contains a description of sampling equipment and procedures, reference to standard operating procedures (SOP) for sample handling and analytical procedures involved.

Data capture documentation: Provide a link to a webpage where the documentation can be found. If no link is

available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

The data capture documentation is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

in the files Methodologies for biological sampling in the Bulgarian Black Sea area, in the GFCM-DCRF manual and in the quality documents;

<https://mrag.co.uk/resources/fisheries-assessment-software>

Estimation of sex of *Rapana venosa* is based on the following paper: Bondarev, 2015, Sexual differentiation and variations sexual characteristics *Rapana venosa* (Valenciennes, 1846), International Journal of Marine Science, Vol.5, No.19 1-10 (doi: 10.5376/ijms.2015.05.0019

https://www.researchgate.net/publication/277553129_Sexual_differentiation_and_variations_sexual_characteristics_Rapana_venosa_Valenciennes_1846

Quality checks documentation: Indicate 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

Y. Each institute involved in the biological monitoring of Bulgarian landings followed internal rules adopted in the institute to meet the quality of the data processed and analysed. The following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/> describes these rules:

Methodologies for biological sampling in the Bulgarian Black Sea area;

Guidelines on Data Quality Assurance and Data Quality Control - (Example has been given with the anchovy with a remark that all measures proposed are valid for all small pelagic species in Bulgarian marine area);

GFCM-DCRF-manual;

Best practice guideline on scientific surveys and holistic methods in the Black Sea;

Manual of protocols on methods used for assessing fish stocks in the Black Sea by analytic methods.

Data storage

National database: Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

International database: Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

GFCM database /DCRF platform/ and in JRC database /Mediterranean and Black sea data call/.

Quality checks and data validation documentation: Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

The documentation for quality checks and data validation information is available on the following link:

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Internal rules for Data Quality Control (DQC) and Data Quality Assurance (DQA) are applied in each institute, including all steps from the collection of samples to final reporting and data storage.

Sample storage

Storage description: Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Each institute is responsible for the storage of the samples of the different species and the samples are not stored under the auspices/responsibility of an international organisation. The samples from turbot are stored in IFA, samples from rapa whelk are stored in IFR and samples from pelagic species are stored in IO-BAS. Part of samples (already processed) are frozen and kept for internal data quality checks (on an annual basis).

The collected samples from turbot are stored at the Institute of Fisheries and Aquaculture. Samples for determining the fecundity of turbot, which are taken and examined in the 2nd quarter of each year, are stored in a 4% solution of formaldehyde in plastic containers for 4 years. Each sample is numbered and labelled. Samples from each pair of otoliths, immediately after removal from the fish are washed and stored in plastic eppendorfs in 96% ethyl alcohol. The samples of the stomachs immediately after their removal are inserted in plastic containers in 4% solution of formaldehyde for further analysis. The soft tissue samples are stored in 40% formalin. All samples are labelled and numbered in the order in which the fish are dissected and are stored for 4 years.

Rapa whelk shells are stored for 2 years in the laboratories of IFR.

Preservation of fish samples in IO-BAS:

1. Cooling is one of the methods used to preserve fish samples;
2. Freezing samples - on board and subsequently placed in a freezer at institute laboratories;

Freezing and cooling led to different effects on morphological characters. In the case of freezing, a degradation in colour from goldish-brown to grey-blackish was visible in every case, while the body shape was unaffected overall, except for the belly being less elevated, soft and pliable after defrosting.

Otolith preparation and analysis - Sagittal otoliths were removed, as were the large pieces of remaining tissue, using tweezers, before being placed in water-filled eppendorfs to soak overnight. If tissue remained after this, otoliths were either left to soak in eppendorfs filled with a 1% solution of potassium hydroxide overnight or a 3% solution of potassium hydroxide for 5 h before being washed in water. Otoliths were then dried overnight before being photographed using the Olympus Trinocular Stereomicroscope at 6.3× magnification with an attached Olympus DP25 camera equipped with the imaging system cell[^]a. An image was taken of the interior and exterior of both the left and right otoliths. Using the same imaging software, measurements (µm) on the exterior side were taken of otolith length – the longest distance between the most anterior and posterior points - (OL) and otolith width – the longest distance between the ventral and dorsal edges - (OW), with the measurements for OL and OW perpendicular to each other. Otoliths were then can be weighed to the nearest 0.001 g – otolith mass – (OM).

Hard parts as otoliths are preserved at the time of age reading by 3 independent readers.

Sample analysis: Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, expert group's reports and protocols) if adequate, where information on the processing of the samples is provided.

Information about the sample analysis is available in the following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/> and

Bondarev, 2015, Sexual differentiation and variations sexual characteristics *Rapana venosa*

(Valenciennes, 1846), International Journal of Marine Science, Vol.5, No.19 1-10 (doi: 10.5376/ijms.2015.05.0019

https://www.researchgate.net/publication/277553129_Sexual_differentiation_and_variations_sexual_characteristics_Rapana_venosa_Valenciennes_1846

Data processing

Evaluation of data accuracy (bias and precision): Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Y. Information about the data accuracy is available in the following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/> and

The precision of the sampling program is based on the requirements of the following reports: "Sampling Calculation and Methodology for Fisheries Data" (WKSCMFD) (ICES 2004) - <https://www.ices.dk/sites/pub/CM%20Documents/2004/ACFM/ACFM1204.pdf>

Report of the Study Group on Practical Implementation of Discard Sampling Plans (SGPIDS) (ICES, 2011a) - <https://www.ices.dk/community/Documents/PGCCDBS/SGPIDS%202011.pdf>

The morphometric relationships between the biological parameters - total weight (TW), shell length (SL), shell width (Wd), aperture length (AL) are analysed on the basis of classical allometric models. The least squares method will be used to estimate the linear - weight relationships (LWR), based on the following equation:

$W=a \times L^{ab}$, where, W – weight; L – length; a, b – constants.

The XLSTAT software is be used to display the linear-weight histograms of the samples from the *Rapana* landings. The statistical data about the different length and weight classes, presented in the histograms, include lower and upper limits, frequency, relative frequency, and density.

Summarized statistics (Mean values, Standard Error, Median, Mode, Standard Deviation, Sample Variance, Kurtosis, Skewness, Range, Minimum, Maximum, Confidence Level, 95.0%) about the measured biological parameters of *Rapana* by ports - Total weight (TW - weight with shell, TW, g), body weight (BW, g), % of BW from TW, shell length (shell length, SL, mm), shell width (Wd, mm) and aperture length (AL, mm) will be presented separately, where relevant.

Editing and imputation methods: Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Internal rules for Data Quality Control (DQC) and Data Quality Assurance (DQA) are applied in each institute, including all steps from data collection and analysis to final reporting. For example, all data, collected in the sea, are included in protocols and checked by a different number of scientists in each institute for mistakes (scientist and expedition leader) and all samples are numbered and identified by given rules. If any corrections are needed, they are presented in separate protocols, controlled by two scientists in IFR. At IO-

BAS editing and imputation of the technical and scientific reports is being conducted by 4 members of the scientific team. At IFA editing and imputation of the technical and scientific reports is being conducted by 2 members of the scientific team.

<http://dcf-bulgaria.bg/data-collection-methodologies/>

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

Y. Information about the data accuracy is available in the following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/>:

Methodologies for biological sampling in the Bulgarian Black Sea area;

GFCM-DCRF-manual;

Best practice guideline on scientific surveys and holistic methods in the Black Sea;

Manual of protocols on methods used for assessing fish stocks in the black sea by analytic methods;

Technical guidelines for scientific surveys in the Mediterranean and the Black Sea - Procedures and sampling for demersal (bottom and beam) trawl surveys and pelagic acoustic surveys;

Guidelines on Data Quality Assurance and Data Quality Control;

and

“Sampling Calculation and Methodology for Fisheries Data” (WKSCMFD) (ICES 2004) - <https://www.ices.dk/sites/pub/CM%20Documents/2004/ACFM/ACFM1204.pdf>

Report of the Study Group on Practical Implementation of Discard Sampling Plans (SGPIDS) (ICES, 2011a) -

<https://www.ices.dk/community/Documents/PGCCDBS/SGPIDS%202011.pdf>

Validation of the final dataset: How are datasets validated (quality checked) before providing to end-user?

Internal rules for Data Quality Control (DQC) and Data Quality Assurance (DQA) are applied in each institute, including data labelling, checks on final protocols, reanalysis of samples at annual basis etc. The laboratory data and data analyses are finally cross-checked by different number of scientists according to the institute and the exact monitoring program (project leader and lab leading scientists). The data accuracy, relevancy, completeness and timeliness are executed and checked by the researchers in each institute.

AR comment: Indicate any deviations. Do not change the text already adopted in the work plan.

There were no deviations.

Sampling scheme identifier: SciObsAtSea*Commercial fishing trip*All species

MS : BGR

Region: Mediterranean and Black Sea

Sampling scheme identifier: SciObsAtSea*Commercial fishing trip*All species
Sampling scheme type: Commercial fishing trip
Observation type: SciObsAtSea
Time period of validity: from 2022 until 2024
Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i> The research survey performed by observers on board aims at data collection for incidental catches of sensitive species (PETs) by different types of fishing activities of the Bulgarian fisheries' fleet, as the following types of fishing vessels will be observed: (1.) turbot fishing with gillnets; (2.) pelagic species fishing with pelagic trawl; (3.) Rapanas fishing with beam trawl; (4.) pelagic and bottom species fishing with polyvalent active and passive gears. The major groups of PETs, that will be observed on board of fishing vessels will include: marine mammals, birds, sturgeons, sharks and rays, vulnerable benthic species, The main priorities of the sampling will be: • Document observations of PETs by different gear types/metiers • Document catches composition and size, with site specific details and specificity by different gear types/metiers • Document the amount and proportion of non-targeted species (including PETs), and their fate/condition at release • Document bycatch rate by different gear types/metiers and fishing effort locations The collected data includes the species composition, quantities, biological parameters and condition of the bycatches of PETs by different gears and metiers, as well as total catch of the target species, catches of other industrial species. The dynamics of the main catches and bycatches of PETs quantities by months and/or seasons, or by sampling localities will be estimated. Information about the bycatch species (including PETs) composition, PETs bycatch rate, size, sex and age structure (if possible). The impact of commercial fishing will be assessed according to the indicator values of the bycatch rate of PETs for the observed fishing activities. The sampling scheme covers Black Sea waters.
Description of the population
Population targeted: Specify which are the primary sampling units (PSU), <i>e.g. all national port*days (information present in former Table 4B).</i> For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area. PSUs are fishing days. The scientific observations of vessels of the Bulgarian fishing fleet should cover 100 fishing days - 30 days on fishing vessels with gillnets, 30 days on vessels with pelagic trawls, 20 days on vessels with beam trawls and 20 days – on vessels with polyvalent active and passive gears. Population sampled: Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends.</i> For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.

All parts of the target population have equal chances of being observed and there is no part of the population that is unreachable.

Stratification: Explain the logic taken to stratify the population and the number of strata generated, *e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

There is no specific geographical stratification since the PSU is a commercial fishing trip in the Bulgarian Black Sea waters.

Sampling design and protocols

Sampling design description: Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Fishing days will be considered as the main unit, used in the observations.

To ensure that data collected provide representative information and sampling for all planned fleet segments distribution of fishing days that will be observed is planned and described in the short description above. The primary sampling units commercial fishing days have an equal and independent probability of being observed.

Simple random sampling without replacement (SRSWOR) is planned.

<http://home.iitk.ac.in/~shalab/sampling/chapter2-sampling-simple-random-sampling.pdf>

Is the sampling design compliant with the 4S principle?: Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

Y

Regional coordination: Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all Member States participating.

The sampling design and protocols follow the recommendation of FAO, applicable for the Mediterranean and Black Sea fisheries research:

FAO (2019a): “Monitoring discards in Mediterranean and Black Sea fisheries: methodology for data collection” <http://www.fao.org/3/ca4914en/ca4914en.pdf>

FAO (2019b): “Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection”

<http://www.fao.org/3/ca4991en/CA4991EN.pdf>

Both documents are also available at <http://dcf-bulgaria.bg/data-collection-methodologies/>

Link to sampling design documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide some details in the textbox.

Documentation for the sampling design is available in the following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/>:

Methodologies for biological sampling in the Bulgarian Black Sea area;

Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection;

Monitoring discards in Mediterranean and Black Sea fisheries: methodology for data collection.

and

<http://www.fao.org/3/x8923e/x8923e.pdf>

Compliance with international recommendations: Indicate ‘Y’ (yes) if the sampling design is in line with international recommendations, and ‘N’ if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y

Link to sampling protocol documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

Documentation for the sampling protocol is available in the following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/>:

Methodologies for biological sampling in the Bulgarian Black Sea area;

Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection;

Monitoring discards in Mediterranean and Black Sea fisheries: methodology for data collection.

Compliance with international recommendations: Enter 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

Sampling implementation

Recording of refusal rate: Indicate 'Y' (yes), 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

Y

Monitoring of sampling progress within the sampling year: Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Annual plans for the scientific activities on board of fishing vessels is prepared and in case of delays from planned activities they should be performed in a short period, to ensure full coverage of the fishing operations observations during the active seasons.

Data capture

Means of data capture: short description (+ photo optionally). Indicate what the means for collecting the data are, e.g. scales, measuring board, dedicated software etc.

Part of the available measuring instruments and software used in IFR (responsible for observers on board program) are:

Precision scale Kern KB 360-3N, 360 g, Precision: 0.001 g;

Precision scale Kern KB 3600-2N, 3600 g, Precision: 0.01 g;

Scales with hook Kern HDB 5K5N, 5 kg;

Scales with hook Kern HDB 10K10N 10 kg;

LAB13_10447197- Stereo microscope Leica EZ 4;

Stereo microscope OLIMPUS SZ51;

Stereo microscope OLIMPUS SZ61;

Statistical program for fish parameters calculation:

The Catch Effort Data Analysis package (CEDA);

The Length Frequency Distribution Analysis (LFDA);

Yield Version 1.0;

FiSAT (FiSAT II);

PRIMER;

XLSTAT.



The accuracy of length measurement of the investigated specimens will be to the nearest 0.1 cm, and for weight - to the nearest 0.01 g. To ensure accurate measurements, the laboratory equipment should be kept in good condition, scales and microscopes should be regularly calibrated and checked yearly by a qualified technician.

The laboratory protocols for each sample include a full description of all measurements. IFR-Varna keeps the protocols from the observations in xls-files. All biological data, produced in a laboratory, should be completely documented and should be traceable back to its origin. The necessary documentation should contain a description of sampling equipment and procedures, reference to standard operating procedures (SOP) for sample handling and analytical procedures involved.



Data capture documentation: Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication – e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

There are internal rules for Data Quality Control (DQC) and Data Quality Assurance (DQA) in IFR, including all steps from planning of marine data collection and analysis - to sea expedition and final reporting. For example, all data, collected in the sea, are included in protocols and checked by two different persons for mistakes (scientist and expedition leader) and all samples are numbered and identified by given rules. If any corrections are needed, they are presented in separate protocols, controlled by two scientists. Scientific data are kept in the form of xls files, as specific technical reports are prepared every six months and on yearly basis.

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Quality checks documentation: Indicate 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but

documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box. Y. The following documents available at http://dcf-bulgaria.bg/data-collection-methodologies/ describe the quality checks: Methodologies for biological sampling in the Bulgarian Black Sea area; Guidelines on Data Quality Assurance and Data Quality Control; GFCM-DCRF-manual; Best practice guideline on scientific surveys and holistic methods in the Black Sea; Monitoring discards in Mediterranean and Black Sea fisheries: methodology for data collection; Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection; Manual of protocols on methods used for assessing fish stocks in the Black Sea by analytic methods.
Data storage National database: Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website. NA. The raw data and the relevant datasets are stored by the Institute of fish resources. Their database is not accessible through a website. International database: Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website. NA Quality checks and data validation documentation: Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box. The documentation is available at: http://dcf-bulgaria.bg/data-collection-methodologies/
Sample storage Storage description: Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year. The hard structures - otoliths, for age readings were stored for 2 years in the IFR. Sample analysis: Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, expert group's reports and protocols) if adequate, where information on the processing of the samples is provided. The documentation is available at: http://dcf-bulgaria.bg/data-collection-methodologies/: Monitoring discards in Mediterranean and Black Sea fisheries: methodology for data collection; Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection and https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20(CRR)/CRR%20346.pdf
Data processing Evaluation of data accuracy (bias and precision): Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of

publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Y. Information about the data accuracy is available in the following documents available at <http://dcf-bulgaria.bg/data-collection-methodologies/> and

The precision of the sampling program is based on the requirements of the following reports: “Sampling Calculation and Methodology for Fisheries Data” (WKSCMFD) (ICES 2004) - <https://www.ices.dk/sites/pub/CM%20Documents/2004/ACFM/ACFM1204.pdf> Report of the Study Group on Practical Implementation of Discard Sampling Plans (SGPIDS) (ICES, 2011a) - <https://www.ices.dk/community/Documents/PGCCDBS/SGPIDS%202011.pdf>

Editing and imputation methods: Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Y. Internal rules for Data Quality Control (DQC) and Data Quality Assurance (DQA) are applied in IFR, including all steps of marine data collection and analysis - from sea expedition to final reporting. For example, all data, collected in the sea, are included in protocols and checked by two different persons for mistakes (scientist and expedition leader) and all samples are numbered and identified by given rules. If any corrections are needed, they are presented in separate protocols, controlled by two scientists. The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

The documentation is available at: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Validation of the final dataset: How are datasets validated (quality checked) before providing to end-user? Internal rules for Data Quality Control (DQC) and Data Quality Assurance (DQA) are applied in IFR, including data labelling, checks on final protocols, reanalysis of samples on an annual basis, final reporting etc. The validation of the final datasets before being provided to the end user is performed by 2 different scientists in IFR.

AR comment: Indicate any deviations. Do not change the text already adopted in the work plan.
There were no deviations.

ANNEX 1.2 - Quality report for socioeconomic data sampling scheme

The quality report fulfils Article 6 (3) (d) of the Regulation (EU) 2017/1004. This document is intended to specify data to be collected under chapter II, points 3, 5, 6, and 7 of the Delegated Decision annex: Socioeconomic data on fisheries, aquaculture and any complementary data collection of fishing activity and fish processing.

Use this document to describe quality aspects of the data collection process (design, sampling implementation, data capture, data storage and data processing etc.). The annex should be filled for each sampling scheme. Where applicable, use the handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study), available on the DCF website.

Provide information under each point in all sections. Do not delete any text from the template.

(Sampling scheme identifier: Fisheries - Census)

Survey Specifications
<i>'Sector name' refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex. 'Sampling scheme' refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling, then outline sampling design. 'Variables' refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. 'Supra region' refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All supra regions'.</i>
Sector name(s): Fisheries
Sampling scheme: Census
Variables: Consumption of fixed capital, Days at sea, Energy consumption, Energy costs, Full-time equivalent (FTE), Gross debt, Gross value of landings, Income from leasing out quota or other fishing rights, Investments in tangible assets (net purchase of assets), Lease/rental payments for quota or other fishing rights, Mean age of vessels, Mean LOA of vessels, Number of fishing enterprises/units, Number of vessels, Operating subsidies, Other income, Other non-variable costs, Other variable costs, Paid labour, Personnel costs, Repair and maintenance costs, Subsidies on investments, Total hours worked per year (optional), Total value of assets, Total vessel power, Total vessel tonnage, Unpaid labour, Value of physical capital, Value of quota and other fishing rights, Value of unpaid labour, Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTEs by gender, Unpaid labour by gender
Supra region(s): Mediterranean Sea and Black Sea
Survey planning
1. Provide a short description of the population to which the sampling scheme applies, <i>e.g. 'less active vessels using passive gears'.</i> The population to which the Census sampling scheme applies is all vessels which are operating under the Bulgarian flag. According to the Bulgarian legislation (Art. 18e from the Fisheries and Aquaculture Act), each owner of a fishing vessel, or his representative, is required at the beginning of each year (before March 31) to submit economic and social

information through a questionnaire for the previous year.

Survey design and strategy

1. List data sources; e.g. interviews, registers, log books, sales notes, VMS, financial accounts etc.

Number of vessels, Total vessel power, Total vessel tonnage, Mean age of vessels, Mean LOA of vessels, Number of fishing enterprises/units, Days at sea, Gross value of landings and all other transversal variables listed in Table 6 of the EU MAP Delegated Decision annex, reported in different data calls are collected under the Control regulation, so they are obtained from the fleet register, logbook and sales notes, which are available in the information statistical system of EAFA - official administrative source.

Energy consumption, Energy costs, Full-time equivalent (FTE), Gross debt, Income from leasing out quota or other fishing rights, Investments in tangible assets (net purchase of assets), Lease/rental payments for quota or other fishing rights, Operating subsidies, Other income, Other non-variable costs, Other variable costs, Paid labour, Personnel costs, Repair and maintenance costs, Subsidies on investments, Total hours worked per year (optional), Total value of assets, Unpaid labour, Value of physical capital, Consumption of fixed capital, Value of quota and other fishing rights, Value of unpaid labour, Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTEs by gender and Unpaid labour by gender are obtained from the annual questionnaires.

The variables Consumption of fixed capital and Value of physical capital are collected through the annual questionnaire as the other economic variables, instead of estimating them by applying the perpetual inventory method (PIM). The reason is that the values derived by the application of PIM were not realistic for the Bulgarian fleet and since the data collection is covering all the vessels and each owner is providing the most accurate data regarding the specific vessel, at national level was taken a decision of using the realistic values reported by the owners, instead of the estimated theoretical numbers.

2. Describe how the sample sizes were determined.

The sampling scheme is Census, so questionnaires are collected from all the vessels which are in the fleet register during the reference year (including the vessels which are not in the fleet register at 31.12 of the year, but has at least 1 day at sea).

3. Describe survey methods and distribution; e.g. questionnaire forms by post, by email, on website, by phone etc. access to other datasets etc.

Every year the Executive Director of EAFA affirms the content and the type of questionnaire, which is prepared by the relevant data collection experts. The questionnaire is updated annually according to the relevant recommendations agreed at the regional level and/or to the end-users need.

The questionnaire is uploaded annually on the webpage of the agency, paper copies are available in the regional offices and each inspector from the agency also has a copy of the questionnaire.

The questionnaire can be completed manually by the owner of the enterprise, his representative /like accountant/ in the presence of an employee (someone from the administration) of the agency who is trained for this and is aware of the meaning of economic

and social indicators or it can be sent through email or by post.

The filling of the questionnaire is completed after the questionnaire is entered in the electronic record-keeping system of the agency and a unique number is issued.

4. Describe the role of auxiliary information, if any, in the strategy: e.g. for validation, cross referencing, fall back data source etc.

No auxiliary information will be collected.

Estimation design

1. Describe method of calculating population estimate from sample.

No estimation procedures are used, because the collection of questionnaires is from all vessels.

2. Describe method of calculating derived data: e.g. imputed values.

No methods for calculating derived data are used, because all variables in the questionnaire are mandatory - no empty answers are allowed.

3. Describe treatment of nonresponse.

If for some reason after 31st of March some of the owners of the vessels had not reported data for the previous year, an employee of the agency contacts the owner and reminds him of this obligation and if necessary – administrative sanction can be imposed.

Error checks

1. Describe potential errors and how and where in the process these are detected, avoided or eliminated e.g., data; duplication, double counting, respondent error, upload error, processing error etc.

Potential errors are missing or unrealistic values, which are covered by the first quality checks of the questionnaire which are made by the employee of EAFA who receives the questionnaire – this initial check is focused mainly on the amount of data filled in and the existence of unrealistic numbers. The second check is focused on the same possible mistakes and it is done by the person who submits the data from the questionnaire in the database of EAFA. If at this stage of the processing of the questionnaire are detect any inconsistencies or value that is not logical, based on parameters of the vessel, number of employees, fishing techniques, days at sea or comparison between landings and income, an employee of the agency contacts the owner of the vessel and if he is not able to provide a logical explanation, he is obliged to come and edit the value. Double counting, data duplication and respondent error are not likely to happen, because each vessel is filling one questionnaire per year. The upload error is also not possible because the scanned questionnaires are uploaded in the system, which is managing the documents in the agency and they are upload to the vessels

files. After the processing of questionnaires by an expert, all the data is checked by another independent expert for typos.

Data storage and documentation

1. Describe how the data is stored.

Data is stored in the EAFA's database.

2. Provide link to webpage where additional methodological documentation can be found, if any.

The documentation is available in the national DCF webpage under section Methodologies used for transversal and socio-economic variables data collection on the following link: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Revision

1. Describe the frequency of the methodology review e.g., revision of; segmentation, survey method per segment, per variable etc.

Every year the Executive Director of EAFA affirms the content and the type of questionnaire, which is prepared by the relevant data collection experts. Change in the methodologies is not expected, because the questionnaires are mandatory according to the national legislation.

Confidentiality

1. Are procedures for confidential data handling in place and documented?

By Order, No RD-212/27.05.2020 of the executive director of EAFA an information security management system was approved. The security management system consists of 21 documents, which are not published online due to security reasons, but all the employees in the agency are obliged to follow them. Within the documentation, protocols to enforce confidentiality are available.

2. Are protocols to enforce confidentiality between DCF partners in place and documented?

NA. The Agency is the only institution that is collecting the data for DCF and we don't have partners now. If in future we have some contracts with any partners for collecting data we will revise the table.

3. Are protocols to enforce confidentiality with external users in place and documented?

Yes, the protocols to enforce confidentiality with external users are in place and they are documented in the security management system described above.

4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation.

There are no issues with the publication of data due to confidentiality reasons. The economic

and social data for segments with less than 5 vessels are reported with the most similar segment.

AR comment: Indicate any deviations. Do not change the text already adopted in the work plan.
There were no deviations.

(Sampling scheme identifier: Aquaculture - Census)

Survey Specifications
<i>'Sector name' refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.</i> <i>'Sampling scheme' refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling, then outline sampling design.</i> <i>'Variables' refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex.</i> <i>'Supra region' refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All supra regions'.</i>
Sector name(s): Aquaculture
Sampling scheme: Census
Variables: Consumption of fixed capital, Energy costs, Financial expenditures, Financial income, Fish feed used, Full-time equivalent (FTE), Gross debt, Gross sales per species, Investments in tangible assets (net purchase of assets), Livestock used, Number of enterprises by size category, Number of hours worked by employees and unpaid workers (optional), Operating subsidies, Other income, Other operating costs, Paid labour, Personnel costs, Raw material: feed costs, Raw material: livestock costs, Repair and maintenance costs, Subsidies on investments, Total value of assets, Unpaid labour, Value of unpaid labour, Weight of sales per species, Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTEs by gender, Unpaid labour by gender.
Supra region(s): Mediterranean Sea and Black Sea
Survey planning
1. Provide a short description of the population to which the sampling scheme applies, <i>e.g. 'less active vessels using passive gears'.</i> The population to which the Census sampling scheme applies is all registered enterprises for aquaculture in Bulgaria. According to the Bulgarian legislation (Art. 27 from the Fisheries and Aquaculture Act), each owner of an aquaculture enterprise, or his representative, is required at the beginning of each year (before January 31) to submit economic and social information through a questionnaire for the previous year.
Survey design and strategy
1. List data sources; <i>e.g. interviews, registers, log books, sales notes, VMS, financial accounts etc.</i> Number of enterprises by size category is obtained from the official administrative source - EAFA's register. Gross sales per species and Weight of sales per species are obtained from

the sales notes.

Consumption of fixed capital, Energy costs, Financial expenditures, Financial income, Fish feed used, Full-time equivalent (FTE), Gross debt, Investments in tangible assets (net purchase of assets), Livestock used, Number of hours worked by employees and unpaid workers (optional), Operating subsidies, Other income, Other operating costs, Paid labour, Personnel costs, Raw material: feed costs, Raw material: livestock costs, Repair and maintenance costs, Subsidies on investments, Total value of assets, Unpaid labour, Value of unpaid labour, Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTEs by gender and Unpaid labour by gender are obtained from the annual questionnaires.

2. Describe how the sample sizes were determined.

The sampling scheme is Census, so questionnaires are collected from all aquaculture farm which are registered in Bulgaria.

3. Describe survey methods and distribution; e.g. questionnaire forms by post, by email, on website, by phone etc. access to other datasets etc.

Every year the Executive Director of EAFA affirms the content and the type of questionnaire, which is prepared by the relevant data collection experts. The questionnaire is updated annually according to the relevant recommendations agreed at the regional level and/or to the end-users need.

The questionnaire is uploaded annually on the webpage of the agency, paper copies are available in the regional offices and each inspector from the agency also has a copy of the questionnaire.

The questionnaire can be completed manually by the owner of the enterprise, his representative /like accountant/ in the presence of an employee (someone from the administration) of the agency who is trained for this and is aware of the meaning of economic and social indicators or it can be sent through email or by post.

The filling of the questionnaire is completed after the questionnaire is entered in the electronic record-keeping system of the agency and a unique number is issued.

4. Describe the role of auxiliary information, if any, in the strategy: e.g. for validation, cross referencing, fall back data source etc.

No auxiliary information will be collected.

Estimation design

1. Describe method of calculating population estimate from sample.

No estimation procedures are used, because the collection of questionnaires is from all aquaculture enterprises.

2. Describe method of calculating derived data: e.g. imputed values.

No methods for calculating derived data are used, because all variables in the questionnaire are mandatory - no empty answers are allowed.

3. Describe treatment of nonresponse.

If for some reason after 31st of January some of the owners of the farms had not reported data for the previous year, an employee of the agency contacts the owner by phone or

EAFA's inspector is visiting the enterprise to remind the owner of this obligation and if necessary – administrative sanction can be imposed.
Error checks
1. Describe potential errors and how and where in the process these are detected, avoided or eliminated e.g., data; duplication, double counting, respondent error, upload error, processing error etc. Potential errors are missing or unrealistic values, which are covered by the first quality checks of the questionnaire which are made by the employee of EAFA who receives the questionnaire – this initial check is focused mainly on the amount of data filled in and existence of unrealistic numbers. The second check is focused on the same possible mistakes and it is done by the person who submits the data from the questionnaire in the database. If at this stage of the processing of the questionnaire are detected any inconsistencies or value that is not logical, based on parameters of the enterprise or its technology production documentation (which is available for each enterprise), number of employees or comparison between sales volume and income, an employee of the agency contacts the owner of the aquaculture farm and if he is not able to provide a logical explanation, he is obliged to come and edit the value. Double counting, data duplication and respondent error are not likely to happen, because for each enterprise one questionnaire per year is filled. The upload error is also not possible because the scanned questionnaires are uploaded in the system, which is managing the documents in the agency and they are upload to the aquaculture farms' files. After the processing of questionnaires by an expert, all the data is checked by another independent expert for typos.
Data storage and documentation
1. Describe how the data is stored. Data is stored in the EAFA's database. 2. Provide link to webpage where additional methodological documentation can be found, if any. The documentation is available in the national DCF webpage under section Methodologies used for transversal and socio-economic variables data collection on the following link: http://dcf-bulgaria.bg/data-collection-methodologies/
Revision
1. Describe the frequency of the methodology review e.g., revision of; segmentation, survey method per segment, per variable etc. Every year the Executive Director of EAFA affirms the content and the type of questionnaire,

which is prepared by the relevant data collection experts. Change in the methodologies is not expected, because the questionnaires are mandatory according to the national legislation.

Confidentiality

1. Are procedures for confidential data handling in place and documented? - By Order No RD-212/27.05.2020 of the executive director of EAFA, an information security management system was approved. The security management system consists of 21 documents, which are not published online due to security reasons, but all the employees in the agency are obliged to follow them. Within the documentation, protocols to enforce confidentiality are available.
2. Are protocols to enforce confidentiality between DCF partners in place and documented? – NA. The Agency is the only institution that is collecting the data for DCF and we don't have partners now. If in future we have some contracts with any partners for collecting data we will revise the table.
3. Are protocols to enforce confidentiality with external users in place and documented? – Yes, the protocols to enforce confidentiality with external users are in place and they are documented in the security management system described above.
4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation. – There are no issues with the publication of data due to confidentiality reasons.

AR comment: Indicate any deviations. Do not change the text already adopted in the work plan.
There were no deviations.

(Sampling scheme identifier: Processing- Census)

Survey Specifications

'Sector name' refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.
'Sampling scheme' refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling, then outline sampling design.
'Variables' refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex.
'Supra region' refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All supra regions'.

Sector name(s): Processing

Sampling scheme: Census

Variables: Consumption of fixed capital, Energy costs, Financial expenditures, Financial income, Full-time equivalent (FTE), Gross debt, Gross investments, Number of enterprises, Number of enterprises by size category, Number of hours worked by employees and unpaid workers (optional), Number of persons employed, Operating subsidies, Other income, Other

operating costs, Payment for external agency workers, Personnel costs, Purchase of fish and other raw material for production, Subsidies on investments, Total value of assets, Turnover, Unpaid labour, Value of raw material by country of origin (domestic, other EU or non-EU), Value of raw material by production environment (capture based fishery and aquaculture sector), Value of raw material by species, Value of raw material by type of processed material (fresh, frozen and semi processed materials), Value of unpaid labour, Weight of raw material by country of origin (domestic, other EU or non-EU), Weight of raw material by production environment (capture based fishery and aquaculture sector), Weight of raw material by species, Weight of raw material by type of processed material (fresh, frozen and semi processed materials), Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTEs by gender, Unpaid labour by gender.
Supra region(s): Mediterranean Sea and Black Sea
Survey planning
1. Provide a short description of the population to which the sampling scheme applies, <i>e.g. ‘less active vessels using passive gears’</i>. Registration and control of processing plants are carried out by the Bulgarian Food Safety Agency (BFSA). At the beginning of each year, an expert from EAFA, which is responsible for the data collection from fish processing enterprises is downloading the list of active processing plants from the official online registers available on the webpage of the BFSA. In regards to the Data Collection Framework, the Bulgarian legislation was adapted in order to collect socio-economic variables from EU MAP, and in 2016 the Fisheries and aquaculture Act was amended. As a responsible institution for data collection, EAFA was provided with the rights to collect data for the fish processing sector. The socio-economic data is collected annually through questionnaires. The population to which the Census sampling scheme applies is all registered processing enterprises in Bulgaria. According to the Bulgarian legislation (Art. 27a from the Fisheries and Aquaculture Act), each owner of a processing enterprise, or his representative, is required at the beginning of each year (before January 31) to submit economic and social information for the previous year.
Survey design and strategy
1. List data sources; <i>e.g.</i> interviews, registers, log books, sales notes, VMS, financial accounts etc. Number of enterprises is obtained from the official administrative source - BFSA’ s register. Consumption of fixed capital, Energy costs, Financial expenditures, Financial income, Full-time equivalent (FTE), Gross debt, Gross investments, Number of enterprises by size category, Number of hours worked by employees and unpaid workers (optional), Number of persons employed, Operating subsidies, Other income, Other operating costs, Payment for external agency workers, Personnel costs, Purchase of fish and other raw material for production, Subsidies on investments, Total value of assets, Turnover, Unpaid labour, Value of raw material by country of origin (domestic, other EU or non-EU), Value of raw material by production environment (capture based fishery and aquaculture sector), Value of raw

material by species, Value of raw material by type of processed material (fresh, frozen and semi processed materials), Value of unpaid labour, Weight of raw material by country of origin (domestic, other EU or non-EU), Weight of raw material by production environment (capture based fishery and aquaculture sector), Weight of raw material by species, Weight of raw material by type of processed material (fresh, frozen and semi processed materials), Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTEs by gender and Unpaid labour by gender are obtained from the annual questionnaires.

2. Describe how the sample sizes were determined.

The sampling scheme is Census, so questionnaires are collected from all fish processing enterprises which are registered in Bulgaria.

3. Describe survey methods and distribution; e.g. questionnaire forms by post, by email, on website, by phone etc. access to other datasets etc.

Every year the Executive Director of EAFA affirms the content and the type of questionnaire, which is prepared by the relevant data collection experts. The questionnaire is updated annually according to the relevant recommendations agreed at the regional level and/or to the end-users need. The questionnaire is uploaded annually on the webpage of the agency, paper copies are available in the regional offices and each inspector from the agency also has a copy of the questionnaire.

The questionnaire can be completed manually by the owner of the enterprise, his representative /like accountant/ in the presence of an employee (someone from the administration) of the agency who is trained for this and is aware of the meaning of economic and social indicators or it can be sent through email or by post.

The filling of the questionnaire is completed after the questionnaire is entered in the electronic record-keeping system of the agency and a unique number is issued.

4. Describe the role of auxiliary information, if any, in the strategy: e.g. for validation, cross referencing, fall back data source etc.

In the annual questionnaire for processing enterprises, no auxiliary information is collected.

Estimation design

1. Describe method of calculating population estimate from sample.

No estimation procedures are used, because the collection of questionnaires is from all fish processing enterprises.

2. Describe method of calculating derived data: e.g. imputed values.

No methods for calculating derived data are used, because all variables in the questionnaire are mandatory – no empty answers are allowed.

3. Describe treatment of nonresponse.

If for some reason after 31st of January some of the owners of the enterprises had not reported data for the previous year, an employee of the agency contacts the owner by phone or EAFA's inspector is visiting the enterprise to remind the owner of this obligation and if necessary – administrative sanction can be imposed.

Error checks

1. Describe potential errors and how and where in the process these are detected, avoided or eliminated e.g., data; duplication, double counting, respondent error, upload error, processing error etc.

Potential errors are missing or unrealistic values, which are covered by the first quality checks of the questionnaire which are made by the employee of EAFA who receives the questionnaire – this initial check is focused mainly on the amount of data filled in and the existence of unrealistic numbers. The second check is focused on the same possible mistakes and it is done by the person who submits the data from the questionnaire in the database. If at this stage of the processing of the questionnaire are detected any inconsistencies or value that is not logical, based on parameters of the enterprise or its production, number of employees or comparison between sales volume and income, an employee of the agency contacts the owner of the processing enterprise and if he is not able to provide a logical explanation, he is obliged to come and edit the value. Double counting, data duplication and respondent error are not likely to happen, because for each enterprise one questionnaire per year is filled. The upload error is also not possible because the scanned questionnaires are uploaded in the system, which is managing the documents in the agency. After the processing of questionnaires by an expert, all the data is checked by another independent expert for typos.

Data storage and documentation

1. Describe how the data is stored.

Data is stored in the EAFA's database.

2. Provide link to webpage where additional methodological documentation can be found, if any.

The documentation is available in the national DCF webpage under section Methodologies used for transversal and socio-economic variables data collection on the following link: <http://dcf-bulgaria.bg/data-collection-methodologies/>

Revision

1. Describe the frequency of the methodology review e.g., revision of; segmentation, survey method per segment, per variable etc.

Every year the Executive Director of EAFA affirms the content and the type of questionnaire, which is prepared by the relevant data collection experts. Change in the methodologies is not expected, because the questionnaires are mandatory according to the national legislation.

Confidentiality

1. Are procedures for confidential data handling in place and documented?

By Order No RD-212/27.05.2020 of the executive director of EAFA, an information security management system was approved. The security management system consists of 21 documents, which are not published online due to security reasons, but all the employees in the agency are obliged to follow them. Within the documentation, protocols to enforce confidentiality are available.

2. Are protocols to enforce confidentiality between DCF partners in place and documented?

NA. The Agency is the only institution that is collecting the data for DCF and we don't have partners now. If in future we have some contracts with any partners for collecting data we will revise the table.

3. Are protocols to enforce confidentiality with external users in place and documented?

Yes, the protocols to enforce confidentiality with external users are in place and they are documented in the security management system described above.

4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation.

There are no issues with publication of data due to confidentiality reasons.

AR comment: Indicate any deviations. Do not change the text already adopted in the work plan.

There were no deviations.

ANNEX 2: MINUTES FROM THE NATIONAL COORDINATION MEETING



Republic of Bulgaria
Ministry of agriculture
Executive agency for fisheries and aquaculture



MINUTES FROM THE BULGARIAN COORDINATION MEETING 2022

TYPE OF THE MEETING: National Coordination Meeting on the Implementation on the implementation of National Data Collection Program – Bulgaria

DATE: 13th of December 2022

PLACE: Executive agency for fisheries and aquaculture – 1 Aleksander Batenberg str., Burgas, Bulgaria

DISCUSSION TOPICS:

1. Results from the research surveys for assessment of biomass and abundance of the fish stocks of demersal and pelagic species in the Black Sea in 2021;
2. Discussing the ongoing research surveys for the establishment of the biomass of the demersal and pelagic fish stocks in 2022;
3. Results from the scientific study for estimation of the catch, discards, and landings, and collection of biological data for all species of fish and other marine organisms, through observers on board of fishing vessels from the fleet of the Republic of Bulgaria, which carry out fishing activities in the Black Sea in 2021;
4. The Work plan for 2022-2024.

PARTICIPANTS:

FROM EXECUTIVE AGENCY FOR FISHERIES AND AQUACULTURE:

- Simona Nicheva – National correspondent for DCF and expert in Directorate “Management of Fisheries and Conservation of Fish Resources, EAFA;
- Kolyo Zhelev – Expert in Directorate “Management of Fisheries and Conservation of Fish Resources, EAFA.

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FROM INSTITUTE OF FISH RESOURCES, VARNA:

- Assoc. Prof. Elitsa Petrova, PhD – Director of Institute of Fish Resources, Varna;
- Feriha Tserkova, PhD – Assistant in the Institute of Fish Resources, Varna.

FROM INSTITUTE OF OCEANOLOGY - BULGARIAN ACADEMY OF SCIENCE, VARNA:

- Assoc. Prof. Violin Raykov, PhD – Scientist in the Institute of Oceanology;
- Assoc. Prof. Marya Yankova, PhD – Scientist in the Institute of Oceanology;

DISCUSSION:

The meeting was opened by the hosts and the participants were welcomed.

Mrs. Feriha Tserkova presented the results from the bottom trawl surveys performed in 2021. In accordance with the collected data and obtained results from the trawl surveys in May and December 2021, the following conclusions and recommendations can be made: The turbot biomass in the Bulgarian Black Sea waters was assessed at 1 465.54 tonnes in May and 2 140.105 tonnes in December. The turbot abundance in the surveyed area was estimated at 803 460 individuals in May and 1 267 936 individuals in December. The recommended MSY (maximum sustainable yield) for Bulgaria should not exceed from 107 t., and it is assumed that the total allowable catch (TAC) could comprise 65 tonnes as a relatively acceptable quantity.

Assoc. Prof. Violin Raykov presented the results from the pelagic trawl surveys in 2021. The total number of species found during the survey in spring and autumn was 22, of which 16 fish, 1 crustaceans, 2 molluscs and 3 macrozooplankton species. The total biomass of the sprat during the spring was 32 420 tonnes. During the autumn of 2021 sprat, does not form permanent clusters and was absent from catches. Individual specimens were found in the different fields. During the study in July 2021, the smallest size class identified was 6 cm and the largest 11.5 cm, with the predominant size classes in the catch composition being 8.5 - 9 cm. Females and males of the sprat were represented with a percentage of 49%. The juveniles were represented by a very small percentage (2%). In July 2021, the food spectrum of sprat encompassed 20 species/groups of zooplankton. The recommended value for sprat catch remain at the level of 2020, namely 8200 t. for 2021.

Assoc. Prof. Elitsa Petrova presented results from the scientific study carried out by observers on board. The data was collected during the 65 expeditions with observers onboard



which took 65 fishing days in 2021. They spent 23 days on fishing vessels with gillnets, 20 days on vessels with beam trawls, 10 days on vessels with pelagic trawls and 12 days on vessels with polyvalent active and passive gears. The main catch from the observed gillnets is turbot (*Scophthalmus maximus*), and the bycatch species composition included mainly common stingray (*Dasyatis pastinaca*), thornback ray (*Raja clavata*), Black Sea shark (*Squalus acanthias*), black mussel (*Mytilus galloprovincialis*) and Rapa whelk (*R. venosa*). The bycatch weight was formed mainly by black mussels - 51.24%, common stingray - 40.53%, thornback ray - 6.25% and Black Sea shark - 1.43%. In 2021, the study on pelagic trawl fishery was focused on catches of sprat (*Sprattus sprattus*) and the fleet segment of vessels with a length over 24 m. The sprat daily catches were on average 1553.80 kg/day $\pm$ 270.56, and the bycatch ranged between 0.31 - 1.73 kg/day. The bycatch in sprat fishery consisted of 1 - 11 different species, with quantities of 0.31 - 1.73 kg/day. The bycatch rate was low - 0.09% TC $\pm$ 0.02 SE and corresponded to the results of 2018 - 2020. Bycatch were formed mainly from whiting (*M. merlangus*), gobies and anchovy, as these three species comprised an average 75.3% of two-year-olds the total bycatch weight, by smaller amounts of horse mackerel, red mullet, scorpionfish, black mussel, crustaceans and etc. The study of Rapa whelk fishery with beam-trawls, covered three fleet segments in 2021 - vessels with lengths of 6-12 m, 12 - 18 m, and 18 - 24 m. Within the segment TBB VL1824 (with the largest lengths), the Rapa whelk catch varied between 2200 - 3090 kg/day, and the quantities of bycatch were between 1.03 - 1.46 kg/day; the total catch was 2804.64 kg/day $\pm$ 135.04 SE, and the average bycatch rate was 0.05% $\pm$ 0.003 SE of this catch. The bycatch species composition was diverse and included 34 species of fish, arthropods and molluscs, and a maximum of 16 species of marine organisms found in the beam trawls per day. The most common species in bycatch were swimming crab, *L. vernalis*, in 75% of daily bycatch, round goby, *N. melanostomus*, of daily bycatch, and turbot, *S. maximus*, in 55% of bycatch. Dominant species by weight in bycatch were black mussels, turbot, stargazer, sand mussels *Anadara* and gobies, which formed 73% of the bycatch weight, followed by swimming crab, scorpionfish, flounder and others. Turbot bycatch included mostly one-year olds, with an average size of 19.49 cm, average weight of 225 g, and condition factor of 1.61. The study with polyvalent vessels covered two fleet segments - fishing vessels with lengths of 12-18 m and 18 - 24 m and was conducted in the summer-autumn period of 2021. The vessels operated with pelagic trawls, targeting horse mackerel and red mullet. In the fleet segment with the largest sizes, the average daily catches of the target species were 999.25 kg/day $\pm$ 145.46 SE, the average weight of the bycatch was 32.66 kg/day $\pm$ 14.55 SE. The average by catch rate was 3.42% $\pm$ 2.11 SE. The quantities of catch and the bycatch rate decreased in the fishing segment VL 12 - 18 m. Specimens with lengths of 8.9 - 16.5 cm and weight between 6.5 - 40.21 g were found in the main catch of horse mackerel. In fishery with polyvalent vessels, a total of 14 species of marine organisms have been identified as bycatch, mainly fish and crustaceans, and a maximum of 6 different species have been identified per day. The most frequently in the daily catches were found gobies (50%), scorpion fish (33%) and swimming crab (33%). In terms of bycatch quantities, the dominant species were gobies (*N. melanostomus*, *G. niger*; 29%), anchovy (*E. encrasicolus*; 25%) and swimming crab (*Liocarcinus spp.*; 24%).



The implementation of the National Work Plan for 2022-2024 was also discussed. Representatives of the research institutes noted that the scientific research surveys are under implementation and the execution of the last part of 2022 activities will be finalised by end of the year. Moreover, the reports from the surveys will be provided in a timely manner in order to be available for the next Annual report. Regarding the results from the spring surveys the status of the stocks that are under observation, it seems to be in the usual exploitation rates.

It was mentioned that the new National Work Plan for 2023-2024 was submitted to the European Commission. The main changes are related to the recreational fisheries section and there are no changes regarding the surveys at sea and biological sampling.

The representatives of EAFA and research institutes have expressed readiness to work on future reports related to the research surveys together.

Representatives of EAFA


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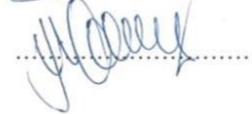
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Representatives of IFR


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Representatives of IO-BAS


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ANNEX 3: MINUTES FROM THE BILATERAL COORDINATION MEETING BETWEEN THE ROMANIAN
AND BULGARIAN ADMINISTRATIONS AND RESEARCH INSTITUTES.



**Bilateral meeting Romania-Bulgaria
18-19 April 2022 Constanța**

Draft Agenda

18.04.2022

Location: NIMRD Grigore Antipa Constanta, Bulevardul Mamaia 300

DATA COLLECTION

11.00 - Presentation of participants and adoption of the agenda; opening speech NAFA president. Interventions from Executive Director EAFA Bulgaria and management of research institutes;

The meeting started with a welcoming speech from Mr. Marian Avram, President of NAFA Romania, and a presentation of the participants.

11.30 - The status of elaboration of the joint recommendation regarding the pilot project which aims at continuing the derogation from the landing obligation and discussions regarding the pilot project for the implementation of the Catch Certificate for TUR (Rec 44/2021/17);

The first point in the agenda was dedicated to the status of elaboration of the joint recommendation regarding the pilot project, which aims to continue the derogation from the landing obligation.

The President of NAFA Romania presented detailed information regarding the status of the pilot project in Romania and before giving the word to the Romanian scientists, he asked what is the status of the survey in Bulgaria. Mr. Kolyo Zhelev presented the current state of play. He started with thanks to the Romanian Institute for the provided methodology for the survey, which was helpful for the scientists and administration from Bulgaria.

Due to administrative burdens, in Bulgaria the survey is still in the planning phase. Both administration and the institute will do their best to provide the results from the survey as soon as possible, but of course, the fluctuations in the weather could cause a slight delay. Due to this situation, it will be relevant to ask the COM for extending of the deadline. Ms. Nicheva added, that in case the survey is not finalized before the end of the month, the Bulgarian scientists will share all the available information.

Mrs. Kazimirovicz asked if there is any available data from previous surveys, which might be relevant to the topic. Mrs. Nicheva explained that the only data, which is available at this stage is the data collected by observers on board of fishing vessels using gillnets for turbot fisheries and that the possibility of usage of the data will be investigated by the Institute of fish resources, which is performing both surveys.

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According to the opinion of both countries, the optimal prolongation of the deadline would be the second week of May.

Mr. Victor Niță presented the current state of play of the survey in Romania. So far, 4 expeditions were performed and Mr. Victor Niță gave an extensive overview of the preliminary results. The estimated survival rate was 78%.

Mr. Zhelev asked if during the survey the specimens are kept for further laboratory analysis. Mr. Niță explained that they kept only a few samples of the turbot and they throw back the rest back in the water.

The next topic was regarding the catch certificate. Mr. Lechev presented the application of the certificate in Bulgaria. Participants agreed to continue this point from the agenda during the second day, since it is more connected to the control activities, than the data collection.

12.30 - The cooperation strategy between the research institutes for the fulfillment of the objectives and reporting, the accomplishment of the joint research missions, the main objectives and activities for the next period of implementation of WP and AR;

The President of NAFA asked for the continuation of the productive cooperation between the two countries and the possible continuation of common surveys.

Mrs. Valeria Abaza from the institute presented their vision of continuation of coordination between the two countries in terms of the research surveys. Mr. Maximov gave an overview of the work, which was done in the previous years (2008-2012) the Romanian vessel performed research missions in both Romania and Bulgaria. At that time, they have jointly established the methodologies. After 2012 due to financial reasons instead of common surveys, scientists from Romania participated in the Bulgarian surveys and vice versa. He hopes that from this year we will be able to continue this tradition, which was stopped during the COVID-19. In both countries, there are 2 spring and 2 autumn surveys planned. He stressed, that the collaboration and coordination between the 3 institutes was great and very productive for all the scientists. The collaboration between the national correspondents and the responsible persons from the institutes was also highly appreciated. He proposed a meeting before the start of the research surveys, so the methodologies are commented one more time.

Mrs. Nicheva explained that the surveys are expected to be performed on time in the Bulgarian waters and that the researched institutes were already contracted for each survey. Both countries recalled the importance of continuation of exchange of the scientists, which is from crucial importance for the quality of the data and improvement of current methodologies.

13.00 - The status of implementation of the data collection agreement signed in 2021 and the elaboration of the national data collection report for 2021;

Mr. Alexandru George presented the current state of play of the Romania annual report for DCF. He gave an overview of the common activities and the joint activities between Bulgaria and Romania in the preparation of the WP 2022-2024.

Mrs. Simona Nicheva presented the status of the AR for 2021 in Bulgaria. Both countries will be ready with the report by the legal deadline of 31st of May.

Both countries agreed that close collaboration between the agencies in the preparation of the balance report also will be of crucial importance for the provision of qualitative analysis and common positions, where relevant.



13.30 - Common methodologies for data collection at regional level: biological, inspection, cross-sectional, socio-economic and environmental data. Discussions on the opportunity of resuming joint research missions.

Each institute prepared a presentation for the activities under the Data Collection Framework.

Mrs. Madalina Galatchi from the National Institute for Marine Research and Development "Grigore Antipa" presented the pelagic trawl survey carried out in the Romanian waters. She started with the followed methodology, period, maps, estimated biomass of main pelagic species. She presented also detailed information for each survey (spring and autumn). There was question by the President of NAFA regarding the connection between the size of the sprat and the environmental conditions. Mr. Maximov explained that the size classes of sprat depends mainly from the depth of the coastline.

The survey results from 2 expeditions carried out in 2021 in Bulgaria (spring-summer and autumn) were presented by Mr. Raykov.

The characteristics of the gear used and vessel together with the sampling area were shown. The type of the hydro-meteorological and biological data collected for selected species, together with the by catch species were listed. Spatial and temporal analysis of the CPUE, CPUA and biomass for the area of interest, during the researched period, represented the momentary situation of the stocks in interest.

The dynamics of various biological parameters such as somatic growth, maturity stages, level of maturation and batch fecundity were indicative for the condition of species of interest. Based on that, and abundance and biomass distribution of the fish species, the conclusions on levels of the rational exploitation were given.

Mrs. Galatchi presented the bottom trawl survey carried out in the Romanian waters. She presented a detailed description and the results for each season for both turbot and whiting. The abundance and estimated biomass for the dogfish were also assessed, even though the individuals were 70 in the spring and 35 in autumn.

Mrs. Feriha Tserkova presented the bottom trawl survey performed by the Institute of fish resources – Varna. She presented the expeditions from 2020 and 2021. The seasonal distribution of the turbot biomass for the period 2014-2020 was also analyzed. The surveys encompassed 4 strata - stratum 1 (15 - 35 m), stratum 2 (35- 50 m), stratum 3 (50-75 m), and stratum 4 (75-100 m).

One survey includes a total of 40 hauls with bottom trawl (with vertical opening 2 m; horizontal opening between the otter boards - 9 m; effective part of wing spread - 13 m; trawling speed 2.2 - 2.6 Nd; trawling duration - 60 min).

In 2021 the spring expedition was between 9 - 19 May.

The high Catch per unit area (CPUA) has been established in:

- in north direction – under of cape Kaliakra, at a depth of 71-63.5 m;
- off the central part of the coast, between Varna, Kamchiya River mouth and near to the cape Emine at depths of 77-85 m;
- in south direction, between Primorsko and Ahtopol 75-78 m;

Spring biomass of turbot was estimated at 1465.54 t, the abundance - 803 460 ind

Autumn expedition was in the period 05 - 30 December 2021

The high Catch per unit area (CPUA) has been established in:

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- in north direction - in front of Durankulak, at a depth of 49-51 m;
- in front of c. Emine and Burgas Bay with a depth of 52-60 m ;
- in south direction, in front of Ahtopol 58-63 m;

Estimated autumn biomass was 2140.105 t, with abundance - 1,267.936 ind

Mrs. Tserkova presented also the survey done by observers on board of fishing vessels. She started with the pilot study in 2017 which aimed to estimate the effect of *Rapana venosa* fishery on the juvenile stages of bottom fish species, such as turbot (*Scophthalmus maximus*) and spiny dogfish (*Squalus acanthias*).

The study in 2018, 2019, 2020 and 2021 aimed at data collection for the target catches, bycatches, and discards of marine organisms by the main types of activities of the Bulgarian fisheries fleet:

- (1.) turbot fishery with gillnets;
- (2.) pelagic and bottom species fishery with pelagic trawls;
- (3.) *Rapana* fishery with beam trawls;
- (4.) pelagic and bottom species fishery with polyvalent gears.

The scientific observations on board of fishing vessels allow estimation of the quantities and biodiversity of catches, bycatches and discards, and collection data for their age, size and sex structure.

Mr. Maximov raised 2 points:

Turbot stocks increased and stabilized compared to 2013-2014.

Problem with the period of prohibition for turbot fisheries. They signaled this to the COM and to NAFA. In the Romanian part due to the climate change the turbot reproduce earlier, so the proposal is to move with 2 weeks the ban. Bulgarian scientists were not able to comment on this at this stage, due to the fact, that the bottom trawl survey in Bulgaria is performed in May. The issue will be further investigated by the Bulgarian authorities and after receiving an official positions from the research institutes more clear position could be shared.

14.30 - Exchange of good practices for freshwater marine and aquaculture in order to develop the aquaculture sector in Romania as well;

Ms. Nicheva presented general information regarding the current situation of aquaculture sector in Bulgaria and proposed to send a detailed information to the ROU colleagues, including the documents and administrative steps in Bulgaria for registering a mussel farm in the Black sea.

Mr. Zhelev explained the procedure and time that is needed for registering an aquaculture farm in inland and marine waters.

Mr. Violin Raykov presented the project between IO and IFA, done under the ministry of education. The conditions for marine aquaculture development in the Bulgarian part of the Black Sea were analyzed. Based on the various data on the hydro-meteorological conditions, bathymetry, currents, chemical composition, and temperatures (data derived and stored at IO-BAS, Copernicus, EmodNet, etc.) and worldwide experience in inshore, offshore and coastal cage mariculture some important conclusions were made.

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The complex analysis, using GIS technology, allowed the scientists to map the various activities in the coastal zone, including Natura 2000 zones. Based on that, and a series of environmental parameters for the last 5 years, suitable areas for fish mariculture (for example sturgeon in cages) in the coastal zone of Bulgaria were identified. The general conclusion from this research is that there are limited zones suitable for cage rearing of the selected species. Such zones could be used for the successful breeding of sturgeons and trout for example. The shown limitation is in line with avoiding the overlapping of selected zones with other human activities and prohibited zones with different regimes of exploitation.

Mr. Raykov asked about the possible conflicts between the aquaculture producers and local communities. Mr. Niță explained that they have performed a survey with 500 participants and according to the results, the local communities prefer to have small enterprises in order to have fresh fish, rather than some big enterprises. Mr. Raykov explained that this is not very applicable, because the farmers, which have money to be invested, prefer to have larger farms, which are generating higher income.

15.00 - Exchange of best practices for the efficient use of non-reimbursable funds in the new programming period 2021-2027, how to support fishermen in the context of the conflict in the region and other relevant issues for collaboration for a common point of view.

Both countries provide information on the state of play of their operational programs and the measures planned. All participants agree on the idea of the continuation of measures for supporting the fisheries sector not only in regards to COVID but also regarding the significant inflations in the EU and invasive activities in Ukraine.

15.30 - AOB. Conclusions.

19.04.2022

DPIM Constanța, Str. Tudor Vladimirescu nr. 52

CONTROL AND INSPECTION

10.00 - Cooperation strategy and discussions on the opportunity to resume joint control and inspection activities, suspended in the context of the pandemic period;

The second day started with introduction of the agenda by the President of NAFA. The participants strongly encouraged the initiative and express an opinion that these activities are crucial for the combat against IUU fisheries in the Black Sea. In addition, was pointed out that all of the activities should be coordinated also with Frontex.

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11.30 - Discussions on the implementation of JDP 2022, SCIP, MMO, point of view on the proposals of recommendations of the European Commission for the joint establishment of the next steps;

ROU side expressed their availability to start the joint inspections. From Romania, the contact person will be Mr. Popescu. For BGR the contact person will be appointed as soon as possible. It was agreed that the first meeting will be in Romania, since the control vessels in Bulgaria are under maintenance. ROU asked for the BGR's opinion about including coastal guards and other relevant authorities in the inspections. BGR replied that fully agree and the BGR coastal guards will also be invited. The proposed period for the first common inspection for 2022 was the mid May. The President asked for the pull of inspectors, that EFCA asked to be assigned by each country. EFCA asked for a number of inspectors by each country that will be available as part of the crew (as inspectors, not a technical crew) to be involved in the 3 vessels which will be available for after the public procurement for the vessels finish. The ROU side decided that they are interested in sending inspectors only to Med and BS. Mr. Popescu added that one of his colleague for the south of Romania asked for the common inspections in the Danube river which were performed before COVID. The proposal is these inspections also to be continued. Mr. Lechev said that BGR will assign a contact point (probably an inspector from Ruse).

During the discussion on the recreational fisheries was mentioned that the main species are gobies and the interest is not very big. Since in Bulgaria there are no permits for the recreational fishermen in the Black sea, the Romanian experience is highly appreciated. Mr. Maxim Aurel showed the Romanian procedure for the establishment of a free certificate. The whole process is very well organized and it takes up to 2-3 minutes. The registration is online and it is available in Romanian and in English.

14.00 - AOB. Conclusions. Closure of the meeting.

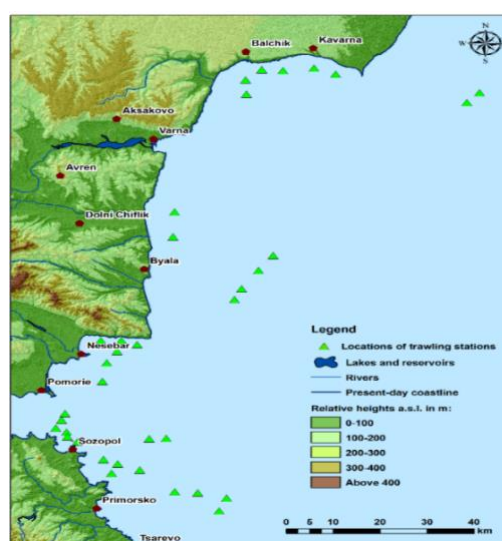
The Executive Director of EAFA proposed that the next meeting for coordination of control activities could be held in Burgas, Bulgaria, in June 2022, and Mr. Avram proposed that this opportunity should also be used for the visit of a fishing port, in the context in which ROU has a project in implementation for the construction of a fishing port in Midia.

ANNEX 4: MAPS OF THE ACHIEVED RESEARCH SURVEY STATIONS FROM THE PELAGIC TRAWL SURVEY AND THE BOTTOM TRAWL SURVEY.

Maps 4.1. – Maps from the pelagic trawl survey, 2022

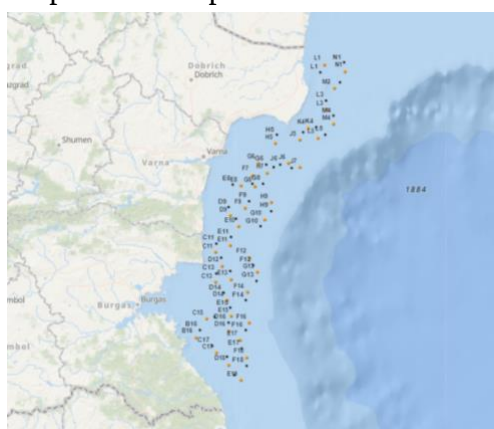


Map of the PTSBS trawling stations, spring 2022

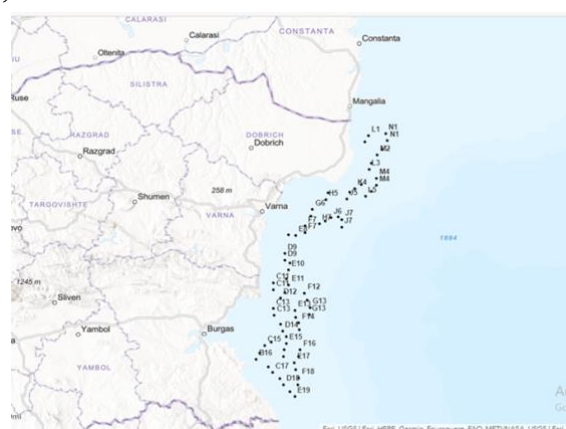


Map of the PTSBS trawling stations, autumn 2022

Maps 4.2. – Maps from the bottom trawl survey, 2022



Map of the BTSBS trawling stations, spring 2022



Map of the BTSBS trawling stations, autumn 2022