



REPUBLIC OF CYPRUS

**MINISTRY OF AGRICULTURE
NATURAL RESOURCES
AND ENVIRONMENT**



**DEPARTMENT OF FISHERIES
AND MARINE RESEARCH
1416 NICOSIA**

**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

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

2023

Version 1.1

Nicosia, 21/6/2024

CONTENTS

SECTION 1: GENERAL INFORMATION	4
DATA COLLECTION FRAMEWORK AT NATIONAL LEVEL	4
TEXT BOX 1A: TEST STUDIES DESCRIPTION	5
TEXT BOX 1B: OTHER DATA COLLECTION ACTIVITIES.....	8
SECTION 2: BIOLOGICAL DATA	12
TEXT BOX 2.1: LIST OF REQUIRED SPECIES/STOCKS	12
<i>End user: GFCM</i>	12
<i>End user: ICCAT</i>	12
TEXT BOX 2.2: PLANNING OF SAMPLING FOR BIOLOGICAL VARIABLES	12
<i>End user: GFCM</i>	12
<i>End user: ICCAT</i>	13
TEXT BOX 2.4: RECREATIONAL FISHERIES.....	13
<i>Region: Mediterranean and Black Sea</i>	13
TEXT BOX 2.6: RESEARCH SURVEYS AT SEA	16
<i>Region: Mediterranean and Black Sea</i>	16
SECTION 3: FISHING ACTIVITY DATA	19
TEXT BOX 3.1: FISHING ACTIVITY VARIABLES DATA COLLECTION STRATEGY	19
SECTION 4: IMPACT OF FISHERIES ON MARINE BIOLOGICAL RESOURCES	20
TEXT BOX 4.2: INCIDENTAL CATCHES OF SENSITIVE SPECIES.....	20
<i>Region: Mediterranean and Black Sea</i>	20
TEXT BOX 4.3: FISHERIES IMPACT ON MARINE HABITATS	24
SECTION 5: ECONOMIC AND SOCIAL DATA IN FISHERIES	26
TEXT BOX 5.2: ECONOMIC AND SOCIAL VARIABLES FOR FISHERIES DATA COLLECTION.....	26
SECTION 6: ECONOMIC AND SOCIAL DATA IN AQUACULTURE	27
TEXT BOX 6.1: ECONOMIC AND SOCIAL VARIABLES FOR AQUACULTURE DATA COLLECTION.....	27
ANNEX 1.1 - QUALITY REPORT FOR BIOLOGICAL DATA SAMPLING SCHEME	29
SCIOBSATSEA*COMMERCIAL FISHING TRIP*ALL SPECIES CAUGHT WITH LLD_SWO.....	28
SCIOBSONSHORE*COMMERCIAL FISHING TRIP*LIST OF COMMERCIAL SPECIES CAUGHT WITH LLD_SWO	32
SCIOBSATSEA*COMMERCIAL FISHING TRIP*ALL SPECIES CAUGHT WITH LLD_ALB	35
SCIOBSONSHORE*COMMERCIAL FISHING TRIP*LIST OF COMMERCIAL SPECIES CAUGHT WITH LLD_ALB	39
SCIOBSATSEA*COMMERCIAL FISHING TRIP*ALL SPECIES CAUGHT WITH OTB_DEF.....	42
SCIOBSONSHORE*COMMERCIAL FISHING TRIP*LIST OF COMMERCIAL SPECIES CAUGHT WITH OTB_DEF	46
SCIOBSONSHORE*COMMERCIAL FISHING TRIP*ALL SPECIES CAUGHT WITH PG_DEF.....	49
SCIOBSATSEA*COMMERCIAL FISHING TRIP*ALL SPECIES CAUGHT WITH PG_DEF.....	53
MEDITS_RESEARCH SURVEY AT SEA	57
SELFATSEA RECREATIONAL (OFF SITE SURVEYS).....	60
ANNEX 1.2 - QUALITY REPORT FOR SOCIOECONOMIC DATA SAMPLING SCHEME	66
SOCIO-ECONOMIC DATA ON FISHERIES_CENSUS	65
SOCIO-ECONOMIC DATA ON FISHERIES_PROBABILITY SAMPLE SURVEY	69
SOCIO-ECONOMIC DATA ON FISHERIES_INDIRECT SURVEY	74
COMPLEMENTARY DATA COLLECTION OF FISHING ACTIVITY_RANDOM SAMPLING	78

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.

General framework

The current document presents the planned Work Plan (WP) for data collection in the fisheries and aquaculture sectors that Cyprus proposes to undertake for the period 2022-2024. The proposed activities are based on the requirements set by the updated Data Collection Framework (DCF), regional agreements and identified end-user needs, taking into account thresholds applied. The WP will cover the areas under the effective control of the Government of the Republic of Cyprus.

Cyprus plans to meet the DCF obligations by the collection, management and use of fisheries data as follows:

- a) Data collected under Control Regulation
- b) Sampling schemes (on board and at landing sites)
- c) Research Surveys at sea
- d) Interviews
- e) New IT systems (database)

Based on the requirements of the new EUMAP, the current programme includes the following new elements compared to past programmes:

- multispecies sampling scheme that enables the estimation of recreational catches for stocks agreed at regional level in accordance with the relevant end-user needs (Section 2),
- stomach sampling and analysis agreed at regional level, with no identified end-user needs at the moment of WP preparation (Section 4).
- New on-board observer scheme for collecting information on catches from passive gears targeting demersal species in GSA25, including PETS (Section 4)
- Study of fisheries impact on marine habitat

National correspondent

The Cyprus National correspondent has been appointed to supervise the data collection programme. There will be sub-coordinators, for separate aspects such as the collection of biological, research survey and economic data required by DCF.

The Cyprus National Correspondent for the National Data Collection Programme is:

Myrto Ioannou
Department of Fisheries & Marine Research (DFMR)
Ministry of Agriculture, Natural Resources & Environment
1416 Nicosia, Cyprus
Phone: +357 22 807822
Fax: +357 22 775955
E-mail: mioannou@dfmr.moa.gov.cy

Participating Institutes

The National Programme will be carried out by the Department of Fisheries and Marine Research (DFMR) of the Ministry of Agriculture, Natural Resources & Environment of Cyprus, which has the following contact details:

Department of Fisheries and Marine Research (DFMR)

Address: 101 Vithleem Street, 2033 Nicosia

Mailing Address: DFMR, P.O. Box 28548, 2080 Strovolos or DFMR, 1416 Nicosia

Phone: +357 22 807 807

Fax: +35722 775 955

E- mail: director@dfmr.moa.gov.cy

Some of the proposed activities have / will be assigned to other scientific bodies. The Medits survey has been assigned for the period 2021-2023 through a tender's procedure to the following joint venture:

- National Agricultural Research Foundation,
Fisheries Research Institute (FRI), Kavala
64007 N. Peramos, Kavala, Greece
Responsible scientist: Dr Nikos Kamidis
- AP Marine Environmental Consultancy Ltd
2, Acropoleos St. Aglanjia
P.O.Box 26728 1647 Nicosia, Cyprus
Director – Responsible scientist: Antonis Petrou

A complete list of the participating institutes cannot be provided at present, as the assignment procedures have not been completed yet.

Data collection website

A link to the national data collection website is provided below:

<http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/B7B01EAEC00C673F4225812A002F0525?OpenDocument>

Regional coordination groups (RCGs)

Cyprus participates in the following RCGs: the RCG for the Mediterranean & Black Sea, the RCG for the Large Pelagic Fisheries and the RCG on Economic Issues. Information on planned regional and international coordination related with data collection is provided in Table 1.2.

(max. 1000 words)

Text Box 1a: Test studies description

General comment: This text box fulfils Chapter II, section 1.2 of the EU MAP Delegated Decision annex.

Data Collection Activity 1: Distribution and biomass estimation of aggregated fish populations using Acoustic Research Survey

The following study was initially submitted and approved in previous WP. Due to technical problems that hindered the use of the vessel planned to be used for the study in 2019, followed by the Covid-19 pandemic, it was not possible to perform the study as planned.

1. Aim of the test study

The acquisition of representative and fisheries independent estimations of fish populations size is of paramount importance for assessing the impacts of fishing on biological resources, and for regulating

fishing activities at sustainable levels of exploitation. The current research survey conducted under the national work plan, in accordance with Table 2 of EU MAP Implementing Decision, lacks the potential of assessing the relative abundance of a number of important species exploited by the Cypriot fishing fleets, including the demersal, semi-pelagic species *Spicara smaris* and *Boops boops*.

Spicara smaris is the most important species for trawlers in Cyprus, while *Boops boops* is the most important species in tonnage and value for the Cypriot artisanal fisheries. The fisheries data produced under the data collection programme and used for assessing the status of the above species cannot be tuned using an independent abundance index, and CPUE (with the many problems it carries) is the nominal code of practice for the delivered assessments which need to be improved. Acoustics seem to open a window of opportunity to get an almost absolute estimate of Spawning Stock Biomass of these species which aggregate during spawning season.

Considering that acoustic surveys have never been carried out in Cyprus – GSA25 due to the low presence of small pelagic species, a study is proposed for performing for the first time an acoustic survey in the area, aiming to gain knowledge of the biomass levels and the spatial distribution of the species *Spicara smaris* and *Boops boops*.

2. Duration of the test study

The duration is 1 year.

It is planned to start in 2022 (1st and 2nd quarter, during spawning season of the target species). If not possible to start in 2022 due to Covid-19 pandemic, the activity will be postponed for 2023 (1st and 2nd quarter).

3. Methodology and expected outcomes of the test study

Acoustic survey will be conducted using modern multibeam/broadband/wideband sonar technology that gives the ability to transect various frequency's simultaneously and post process the echograms to facilitate various scopes of analysis. The survey will be cover all area under the effective control of the government of the Republic of Cyprus in depths bellow 50m were the spawning event occurs for the semi demersal (and /or semi pelagic) species, *Spicara smaris* (most important species for trawlers in Cyprus) and *Boops boops* (most important species in tonnage and value for Cypriot artisanal fisheries) and when fish aggregate in relatively big schools. Other species will also be studied wherever possible. Bathymetric data from LIDAR mapping survey will be considered for proper beam dead zone calculations coupled with calibration on survey areas and species target strength tests on the field.

Fish sampling will take place using both pelagic and bottom trawls in order to “translate” the echo inputs into species biomass.

Sampling strategy will be based on systematic pre-planned design which provides the most precise estimate of the abundance in a fixed domain and delivers the best distribution maps. An autocorrelation model will be used to estimate the survey precision. The selected depth allocation reduces the sampled water volume considerably and this allows for a very representative coverage of the study area.

Expected outcomes will be the estimation of the spawning stock abundance of the two target species, a distribution map of aggregation patterns and hot-spot spawning areas that might need special management considerations. Auxiliary information on species that will happen to be sampled during the cruise will be collected and evaluated. Estimation of plankton abundance will also be delivered as part of the post processing process which will add to the existing knowledge of

the ecosystem functions and productivity. Multibeam technology will also give an opportunity to study internal school structures and behaviour which play an important role in the way the fish aggregate and has a great influence on the catch.

Derived survey SSB quantities will be compared with the estimates calculated in single species stock assessments and not only will advise the assessments but will also provide insights of the predicted and the real populations.

Based on the outcomes of the pilot study, Cyprus will evaluate the usefulness of including this acoustic survey in future work plans and/or may propose a continuation of the pilot study for optimising the survey design. In case the survey is decided to be performed systematically under the national work plan, it is expected to be coordinated under the MEDIAS (MEDiteranean International Acoustic Survey) Steering Committee.

(max 900 words per study)

Data Collection Activity 1: Distribution and biomass estimation of aggregated fish populations using Acoustic Research Survey

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

The study took place within the time period and the survey area planned, following the MEDIAS protocol to ensure harmonization and comparability of the data. Specifically, it was carried out during March-April 2023, along 27 predetermined acoustic transects.

During the survey, 52 CTD stations and 52 plankton hauls were sampled in order to obtain a picture of the environmental conditions and collect information on the synthesis of the ichthyoplankton community in the study area. In addition, 13 pelagic trawl hauls and four bottom trawls were held aiming to obtain biological sampling to allow echo traces discrimination.

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

During biological sampling it was not possible to obtain enough of the targeted species. There was no catch of *Spicara smaris* and few individuals of *Boops boops*.

Fish schools were observed close to the bottom during the day but the rough seabed type did not allow the sampling gear to operate close to the bottom. Moreover, the high percentage of small-scale fishing gears (such as nets) in the study area made it even more challenging to conduct adequate pelagic trawl sampling. Additionally, unfavourable weather conditions hindered the application of pelagic hauling in the northwestern part of the island, where high fish concentrations were detected. Due to these limitations in sampling, the final output will be categorized into echo abundance into more general types like benthopelagic, pelagic, and mesopelagic aggregations instead of referring to specific species. This approach is adopted to present a spatial distribution of fish assemblages in Cyprus waters despite the interrupted sampling.

Among the targets of this pilot survey was to understand the peculiarities of the area in terms of the pelagic species distribution and adjust future surveys in order to anticipate difficulties in terms of bathymetry and weather conditions. All adjustments made were deemed necessary to complete the specific acoustic survey in the most successful way. Difficulties encountered will be recorded and solutions or adaptations will be incorporated in a revised survey protocol proposal.

Incorporation of study results into regular sampling by the Member State.

A pilot study, following a revised survey protocol, is planned to be carried out in 2024. At the moment it is not planned to incorporate the study into regular sampling.

(max. 900 words per study)

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.

Data Collection Activity 1: Deep Water Red Shrimps Bottom Trawl survey in Cyprus waters

The following data collection activity was initially submitted and approved in previous WP. Due to unexpected reasons, followed by the Covid-19 pandemic, it has not been possible to carry out the survey as planned.

1. Aim of the data collection activity

An emerging need, recommended from various scientific groups (e.g. SAC SRC-EM) associated with the streaming process of developing a deep water red shrimp management plan in the East Mediterranean under GFCM, is the increase of knowledge on the relevant species (*Aristaeomorpha foliacea* and *Aristeus antennatus*), through research surveys and targeted data collection programs. In fact, scientific knowledge of the particular species in the area is scarce.

Gaining in-depth fishery independent knowledge on the abundance, distribution, population structure and growth of the red shrimp stocks in the East Mediterranean will support the effective assessment of the stock status of the species and contribute to the formulation of sound management measures for their exploitation.

Aside from scientific information on deep water red shrimps, a deep-water trawl survey may provide valuable knowledge on the associated species composition and the possible presence of vulnerable marine ecosystems (VMEs), which can be used for the formulation of management measures regulating deep water shrimp fisheries. Furthermore, as some fishing grounds can be found around coral habitats or on the edge of underwater canyons, except of the direct effects of towed gear over these ecosystems, another significant problem which can be attempted to be studied is the sediment resuspension from trawling-

Considering the above, a deep water red shrimps bottom trawl survey in Cyprus waters (GSA25) is proposed, aiming the following:

- Collection of data on the abundance, distribution, population structure and growth of the red shrimp stocks (*Aristaeomorpha foliacea*, *Aristeus antennatus*)
- Collection of data on the associated species
- Possible identification of vulnerable marine ecosystems (VMEs)

2. Duration of the data collection activity

Knowing that deep water red shrimps are characterized by seasonal and spatial movements highly dependent on sex and life stages, a year-round study is proposed for carrying out a survey in 4 quarters, starting from Q1 or Q2 of 2022 and ending in Q4 of 2022 or Q1 of 2023 respectively.

3. Methodology and expected outcomes of the data collection activity

In order to be able to compare results in a standardized manner across regions, and subsequently be compatible with the available Cypriot MEDITS data series, the proposed methodology is the one used in the MEDITS survey. MEDITS protocol can be found in the following link:

https://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

The differences with the Cyprus MEDITS survey will be: a) the spatial coverage will be greater than the one of the Cyprus MEDITS deep water hauls b) there will be a year-round coverage, carrying out the survey during each quarter with fixed sampling stations c) in some particular cases sampling activity will not be restricted during daylight, in order to capture population structure changes driven by the foraging and hunting activity knowing to occur in these species as well as their moves to shallower areas (as auxiliary information) d) a finer station selection will be made, based on habitat suitability with depth ranging from 200-800 m, considering also the identified commercial fishing grounds of the fishing fleets operating in GSA25.

At the end of the study, it will be possible to evaluate the usefulness of the survey in terms of the delivered outputs, the methodology used and the progression in future.

Main expected outcomes will be:

- a distribution map of the deep water shrimps
- first analytical data acquisition for setting the founding to move from data limited to data rich approaches in stock assessment of deep-water shrimps in the East Mediterranean
- information on associated species
- possible discovery and mapping of fragile environments and/or VMEs
- possible discovery and mapping of nursery and/or spawning aggregations

All information collected will be useful for formulating advice on the management of deep water fisheries resources in the area and on minimizing negative impacts of fishing activities on the marine ecosystem.

(max 900 words per activity)

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

As mentioned in the 2022 AR, despite the efforts in finding a suitable vessel and relevant expertise for carrying out the study in 4 quarters, it was not possible to carry out the study as planned. The study was carried out for the first time during the second quarter of 2022 (June), during the fishing season and coinciding with the fishing grounds of the deepwater red shrimp fishery in GSA25. Cyprus carried out the study also in 2023 during the second quarter of 2022 (June). As in 2022, 3 hauls within the depth range 500-800m were carried out, covering the fishing ground of the deepwater red shrimp fishery in GSA 25. As highlighted by the GFCM Subregional Committee for the Eastern Mediterranean (SRC-EM), the new targeted hauls performed in Cyprus provide

important additional information towards a solid scientific basis for the management of deep-water red shrimps in the Levant Sea, and surveys-at-sea are deemed crucial.

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

As expected, important data are collected on deep-water shrimps in the East Mediterranean, allowing scientists to move progressively from data limited to data rich approaches in stock assessment of deep-water shrimps in the East Mediterranean. Information on associated species of the deep-water red shrimp fisheries in the Levant Sea is also collected, as expected.

Incorporation of study results into regular sampling by the Member State.

As stated also in the 2022 AR, depending on the outcomes of the study during the period 2022-2024, it is anticipated that the study will be incorporated into regular sampling from 2025 onwards.
(max. 900 words per study)

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.

Data Collection Activity 2: RCG´s Secretariat services

1. Aim of the data collection activity

Support the operation and functioning of the RCG´s Secretariat for a fluent regional coordination of data collection activities.

2. Duration of the data collection activity

01/01/2023 - 31/12/2025

3. Methodology and expected outcomes of the data collection activity

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

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

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

Overall expected outcomes

- ✓ A full-time dedicated Secretariat support service for the RCGs enables a consistent approach to administering RCG activities, facilitates communication, and enhances the intersessional work, supporting also the work of sub-groups.
- ✓ A dynamic and permanently updated website will be kept available including as features:
 - o Integration - allowing seamless synchronization with third-party information needs and requests.
 - o Responsive display - to serve content across multiple devices, screens, and browsers.
 - o User experience- maintaining a satisfactory user experience throughout the website sections.
 - o Accessibility - To any interested visitor in a user-friendly way across the website sections.
 - o Retention- keeping visitors coming back to the website.
 - o Links to relevant restricted access sites and virtual environments.
- ✓ The Visual identity for the RCGs is increasingly consolidated and visibility and understanding of the work by the RCGs is enhanced for the relevant stakeholder groups.
- ✓ A regularly updated Stakeholders' database improves the communication function among the RCGs' experts and the stakeholders' community.
- ✓ Internal communication protocols and help-desk in place makes it easier for any new comer to efficiently join, adopt responsibilities, and contribute to the RCGs objectives and work commitments.
- ✓ The public description of the secretariat functions, operational working protocols and commitments will build trust and enhance the whole network transparency and accountability.

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

During 2023 the RCGs Secretariat provided administrative and communication support to the Regional Coordination Groups (RCGs), and, in particular to the RCG Chairs. It facilitated communication among RCG chairs, National Correspondents and the European Commission. The Secretariat also maintained and updated the RCGs website as a key information element.

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

The activities of the RCGs Secretariat in the context of the SecWeb Project were extended to last until the end of February 2023. In 2023, upon finalization of SecWeb grant, Member States and the European Commission decided to continue the RCGs Secretariat services in a short-term business scenario.

During 2023 the Secretariat provided administrative support to the Regional Coordination Groups (RCGs), coordinating, facilitating, and liaising within the RCG network, and, in particular, among RCG Chairs, National Correspondents and the European Commission. In addition, the Secretariat was responsible for maintaining and updating the RCGs website and communication strategy.

Incorporation of study results into regular sampling by the Member State.

The longer-term perspective of the RCGs Secretariat services will build upon the outcomes from SECWEB and dealt with inter-sessionally and pan regionally by ISSG NCs in 2023 and beyond.

SECTION 2: BIOLOGICAL DATA

Text Box 2.1: List of required species/stocks

End user: GFCM

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

There were no deviations from the work plan in terms of planned vs. achieved data collection (lengths only).

Actions to avoid deviations

Not applicable.

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

End user: ICCAT

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

There were no deviations from the work plan in terms of planned vs. achieved data collection (lengths only).

Actions to avoid deviations

Not applicable.

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

Text Box 2.2: Planning of sampling for biological variables

End user: GFCM

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

There were no deviations from the work plan in terms of planned vs. achieved collection of biological data (other than lengths).

Actions to avoid deviations.

Not applicable.

End user: ICCAT

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

There were no deviations from the work plan in terms of planned vs. achieved collection of biological data (other than lengths).

Concerning *Mullus surmuletus*, it was not possible to collect biological data from sampling scheme “SciObsAtSea*Commercial fishing trip*all species caught with OTB_DEF”. The species is not commonly caught by OTB, and in combination with its high value it was not possible to collect samples for biological variables during onboard sampling. There were also no discards of the species during onboard sampling, for this no samples were collected during 2023 from this sampling scheme. Discards of this species from OTB are never recorded, therefore the zero achieved number was expected and is not considered as deviation.

Actions to avoid deviations.

Not applicable.

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.

Marine Recreational Fishing (MRF) is a popular activity in Cyprus, partly regulated through the issue of annual licenses at a fixed price and with restrictions on the use of specific fishing gears, bag limits, spatial and temporal restrictions, prohibited species and complete ban of marketing of the catches. MRF from boat, mainly using hook and line, as well as free-dive spearfishing require an annual license, whereas shore fishing does not and is therefore barely regulated.

In line with Decision (EU) 2016/1251 and its 2017-19 data collection work plan, Cyprus has conducted a pilot study on its MRF, aiming to provide first estimates of the fishing effort (number of fishers, number and spatial/temporal distribution of trips, methods/gears used) and the size and composition

of catches by method/gear, and also to outline the socio-economic characteristics of this activity. The study was conducted based on a one-year recall telephone survey approach and included all three existing MRF types, boat fishing, spearfishing and shore fishing. Results highlighted the great magnitude of this sector in terms of catches and ecological impact, especially on certain vulnerable predatory species, as well as its social and economic significance and indicated that MRF in Cyprus and probably elsewhere in the Mediterranean is greatly underestimated and that it should definitely be taken into account when considering measures for fisheries management. It also showed that the diversity of MRF in space, time, methods, target species and participants, as well as its importance to recreational fishers, probably makes it harder to monitor and manage than commercial fisheries (Michailidis et al. 2020).

Following Decision (EU) 2016/1251, Commission Delegated Decision (EU) 2021/1167 provides that starting from 2022 MS shall carry out statistically robust multispecies sampling schemes, allowing for catch quantities estimation for stocks in recreational fisheries, as a minimum for species listed in Table 4 of the Annex, i.e. eel (including in fresh water), elasmobranchs and highly migratory ICCAT species. In addition, where recreational catches affect the development of fish stocks, MS shall carry out biological sampling in accordance with end-user needs, as agreed at marine region level. Such discussions are ongoing on European and Mediterranean levels (RCG Med&BS, GFCM WGRF) and the collection of biological data has been preliminarily proposed for certain priority species by region, for example *Dicentrarchus labrax*, *Dentex dentex* and *Epinephelus* spp. for the Mediterranean Sea. Lists of priority species are expected to be updated after the finalization of initial pilot studies in all MS.

Towards this and as provided in Regulation (EU) 2017/1004, each MS should prepare by 15th October 2021 its national data collection work plan, including a detailed description of the data to be collected in accordance with the multiannual Union programme, the temporal and spatial distribution and the frequency by which the data will be collected, the source of the data, and the procedures and methods to collect and process the data into the data sets that will be provided to end-users. In addition, as methodological approach should be consistent for all MS, RCG MED&BS 2021 has recommended implementing MRF data collection by following methodologies described in the “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.” (Grati et al. 2021). This handbook establishes a minimum set of necessary information for monitoring recreational fisheries, while, at the same time, allowing for flexibility to accommodate national specificities and data collection needs.

Considering the above and in line with the aforementioned handbook, for the period 2022-24, MRF data in Cyprus will be systematically collected using a logbook scheme through the mobile application Cy-FIS*, that will be mandatory for all recreational fishers with an annual fishing licence (boat fishing and spearfishing) and optional for recreational fishers from shore that are not required to own a fishing licence. Consequently, all fishing trips of all licenced fishers will be recorded in terms of effort, catch per species (landings and releases), and biological parameters like individual length and/or weight where needed. However, as logbooks will be optional for recreational fishers from shore and thus the data collected are expected to be incomplete, nationwide probability-based telephone one-year recall surveys will also be conducted in order to fully cover this activity. These surveys will be conducted every two years, starting from 2023 and will aim to estimate the number of shore fishers and collect data on spatial and temporal distribution of effort, catch per species and method used, etc. Landline and cell phone numbers will be randomly selected from the national telephone directory, and to cover households not included there, a fraction of the sample will come from random cell phone number

generation. A random, multistage, stratified sampling strategy will be followed. Numbers will be randomly selected in a way that postal areas and area types within (urban or rural) are proportionally represented in the sample according to their population size (based on the most recent population census), so that households in each area have equal selection possibility and no household is called more than once. The sample size will be adjusted to achieve a relative precision of at least 0.05 and confidence level of 0.95. Demographic data will be collected and participants will be asked if they (or other people in the household and how many) generally fish in the sea from shore and if they do, to recall their own shore fishing effort and catches by species for the whole previous year. The selected approach of off-site surveys (logbooks and recall surveys) is preferred over on-site surveys, as a wide range of activities scattered in space and time has to be covered. It is possible that this approach could introduce declaration or recall bias, as well as effort and harvest overestimation, it can however achieve much better population coverage regardless of the high diversity of fishing practices among fishers, and thus provide good overall annual estimates. On-site surveys would be much costlier, the sample size would be much smaller (and thus uncertainty would be higher), and would greatly suffer from representativeness bias.

* Cy-FIS is a free mobile application for Android and iOS devices that offers the ability to the Department of Fisheries and Marine Research (DFMR) to electronically record fishing and other related activities, collect fisheries, biological, ecological and other relevant data, monitor compliance with regulations and communicate with users. It is also able to record vessels' positions and inform users about fishing restrictions that may apply in certain areas, using interactive maps. Cy-FIS was developed for DFMR by Quality & Reliability S.A. and co-financed by the European Maritime and Fisheries Fund (EMFF) 2014-2020 - Action 3.1.7 of Article 76.2, of Measure 3.1 - Control and Enforcement of the Operational Program (OP) "Thalassa 2014-2020".

It is noted that a non-binding Regional Work Plan (RWP) for 2023 has been submitted by RCG Med&BS, including regional coordination for sampling marine recreational fisheries.

References

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

Michailidis N, Katsanevakis S, Chartosia N, 2020. Recreational fisheries can be of the same magnitude as commercial fisheries: The case of Cyprus. Fisheries Research 231:105711

The logbook-based data collection scheme provided in the WP was successfully applied on time, and data reporting through it is now obligatory for all recreational fishers with an annual fishing licence (boat fishing and spearfishing). This obligation is provided in the terms and conditions of the fishing licence (term no 14), which are part of the national fisheries legislation, according to the basic national fisheries law provisions. Specifically, the licence terms provide that for the purposes of recording fishing activities and recreational fishing catches, all fishing trips should be reported to the DFMR through the Cy-FIS application for Android (Google Play) and iOS (App Store) devices. Use of the app is mandatory for all licensed recreational fishers and for all trips. In the application, the fisher's details, the start and end of the fishing trip (day and time) in real time (immediately before the start and immediately after the end), the total catch in weight (kg) and number of individuals per species and length data for some species according to needs (based on notifications), should be

reported. In the event that two or more licensed fishers fish from the same vessel, the reporting is made by only one (preferably the owner of the vessel), stating in addition to the above the total 14 number of licensed fishers on board. Fishers who for any reason cannot or do not wish to use the mobile application, should print and fill-in a special form (provided in the terms as an appendix) in real time and enter the data in the online version of the application at dfmrapp.com.cy, within 48 hours from the end of the fishing trip. More details on the installation and usage of all versions of the application (android, ios, web) are also provided as illustrated guides at the link below: <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/371804B291E2709AC22586C30041DEF9?OpenDocument> . It is noted that all data collected through the application are stored in a special database from where they can be downloaded for further analyses.

It is further noted that during 2022 a non-binding Regional Work Plan (RWP) for 2023 was submitted by RCG Me&BS, including regional coordination for sampling marine recreational fisheries.

Deviations from the work plan

Although the mobile app and the website were developed and launched successfully during 2022, and recreational fishers were well informed on their purpose and their usage, the data collected do not seem to adequately represent the actual effort and catches for 2023, mostly due to the unwillingness of users to actually use them, although they are mandatory. This was probably because this system was relatively new to the fishers and they were not familiar with it. It has to be noted though that during 2023 there was an improvement on the number of records provided through the mobile app compared to 2022.

Action to avoid deviations

Starting from 2023, stricter control measures have been put into place, both as frequent real time inspections of the app's usage in the field, as well as post crosschecks of the observed effort and catch compared to the data reported by the fishers. In cases of non-compliance, fishers are reported and fined accordingly. Furthermore, relevant communication with recreational fishermen on the mandatory use of the mobile app has continued. It is noted that during 2023 there was an improvement on the number of records provided through the mobile app compared to 2022, and there seems to be further improvement during 2024.

(max 900 words per region)

Text Box 2.6: Research surveys at sea

Region: Mediterranean and Black Sea

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)

International bottom trawl survey in the Mediterranean (MEDITS)

In accordance with the list of mandatory research surveys of Commission Implementing Decision (EU) 2021/1168, the International bottom trawl survey in the Mediterranean (MEDITS) is the only mandatory research survey that will be carried out by Cyprus (GSA25) during 2022-2024. No additional surveys will be performed during the relevant period. The MEDITS survey is carried out by Cyprus since the beginning of its national data collection programme (i.e. 2005).

1. Objectives of the survey

The objectives of the survey are:

- To create time series of standardized abundance and biomass indices of demersal species in the Mediterranean Sea, allowing the identification of spatiotemporal variations in their abundance and distribution
- To collect biological data from a reference list of 82 target species (including 32 elasmobranchs) assigned in two groups, allowing the estimation of population structure and biological parameters.

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

The common methodology for the survey is defined in the instruction manual of Medits (version 9, 2017), available at:

http://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

It is noted that a non-binding RWP for 2023 has been submitted by RCG Med&BS, including regional coordination for the Medits survey.

Cyprus performs 26 sampling hauls in GSA25, distributed in the different depth zones as presented in Table 2.6.1 below. Figure 2.6.1 provides the distribution of sampling hauls in GSA25.

Table 2.6.1. Sampling stations distribution by stratum

Stratum	Depth zone (m)	No of Hauls
32101	10-50	5
32102	50-100	9
32103	100-200	5
32104	200-500	3
32105	500-800	4
Total Hauls		26

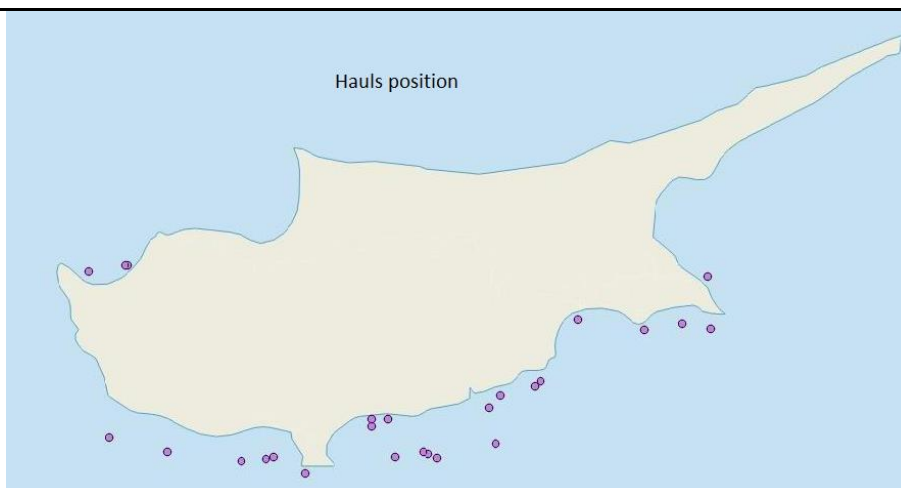


Figure 2.6.1: Distribution of sampling hauls of the Medits survey in GSA25.

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

The participating countries in the Medits survey (including non-EU Member States) are the following: Spain, France, Italy, Malta, Slovenia, Croatia, Greece, Cyprus, Montenegro, Albania. A list of all vessels used until now, for carrying out the survey, is included in the Medits instruction manual. The Medits Steering Committee is composed by national coordinators. Some MS can have regional coordinators to manage certain regions within the country. The Medits Steering Committee nominates the person in charge of the coordination at international level every 3 years (with possible extension for another 3 years). Information on the National and Regional coordinators, as well as the international coordinator is provided in the Medits instruction manual.

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

Cyprus is the only country that performs the Medits survey in GSA25; the participation concerns financial, technical and personnel resources.

(max 450 words per survey)

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

The latest available meeting report of the MEDITS coordination group may be found at the following link:

<http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/E5144C17F269ED9B4225807A00322642?OpenDocument>

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.

- MEDITS data stored in different files in accordance with MEDITS instruction manual are annually submitted to JRC/DGMARE under the Official Data Call on Med&BS.

- Biological data from MEDITS surveys are annually submitted to GFCM under DCRF obligations.
- Abundance indices: Used on routine basis for performing stock assessments (for certain stocks) which are submitted to GFCM.
- Incidental catches of mammals, birds, reptiles: Submitted annually to GFCM in accordance with DCRF obligations. Information on incidental catches from MEDITS survey is additionally submitted to end users whenever such information from surveys is requested.
- Cyprus MEDITS results are provided to end users upon request/collaboration to be used in scientific projects and scientific publications.

7. Extended comments

It is noted that during 2022 a non-binding Regional Work Plan (RWP) for 2023 was submitted by RCG Med&BS, including regional coordination for the Medits survey.

(max. 450 words per survey)

SECTION 3: FISHING ACTIVITY DATA

Text Box 3.1: Fishing activity variables data collection strategy

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

Mediterranean Sea

Based on Chapter II point 3.1 of the EU MAP Delegated Decision annex, data on fishing activity shall cover variables indicated in Table 6 at the lowest relevant geographic level by fleet segment and metier level 6.

Complementary data collection is required for vessels with length 0-6m and 6-12m for the following reasons:

- The use of logbooks, which provide information on effort variables, is not required for fishing vessels less than 10 metres length.
- For fishing vessels <10m, sales notes and sales receipts are considered as a proxy for fishing days, days-at-sea, fishing trips and fishing operations; however, these effort variables cannot be assigned to metiers. Furthermore, sales notes and sales receipts cannot be related with certain effort variables (e.g. length of nets, number of hooks, soaking time).
- Although all fishing vessels in Cyprus are required to record their landings irrespectively of quantities caught (through logbooks, sales notes and sales receipts), in the absence of logbooks the landings of vessels<10m cannot be assigned to metiers.

Complementary data on effort and landings by métier will be collected through a probability sample survey. The PSU will be the landing site on a given day, which will be selected randomly four times per week. SSU will be the cluster of trips within the PSU, aiming to sample all vessels that land from morning until midday, which is the landing time for most of fishermen. For each sampled trip, data on métiers and quantities of gears used will be recorded, as well as all quantities of species, assigned to each métier. This probability sample survey will take place as part of the biological sampling; this information is collected during biological sampling by DFMR since the introduction of “métier” in data collection.

For complementary data collection on landings, the aim is to estimate the percentage of landings of each species assigned to each métier. The percentage will be then raised to the total landings (which derive from data collected under Control Regulation), allowing the estimation of landings by species by métier.

For complementary data collection on effort, the aim is to estimate the % of fishing days, days-at-sea, fishing trips and fishing operations assigned to each métier. In case during a fishing day more than one métier is exercised, one fishing day/day-at-sea/ fishing trip/fishing operation will be assigned to each of the métiers exercised by the vessel. The percentage will then be raised to the total number of fishing days/ days-at-sea/ fishing trips/fishing operations (which is estimated from number of sales notes and sales receipts collected under Control Regulation), allowing the estimation of these effort variables by métiers. Based on data collected on length of nets, number of hooks, number of pots and soaking time, an average value of these variables will be estimated by métier, and will be raised to the total number of fishing days by métier.

(max. 900 words)

Deviations from the work plan

There were no deviations from the work plan.

Actions to avoid deviations

Not applicable.

(max. 900 words)

SECTION 4: IMPACT OF FISHERIES ON MARINE BIOLOGICAL RESOURCES

Text Box 4.2: Incidental catches of sensitive species

Region: 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.

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):

- 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, we have considered the following:

- Papageorgiou, M., Papadopoulou, A., Hadjioannou, L.. 2020. Cyprus Bycatch Project “Understanding multi-taxa ‘bycatch’ of vulnerable species and testing mitigation a collaborative approach in Cyprus”. Technical Report: Results of Phase 1 (2018-20019) of the bycatch monitoring programme in Cyprus. BirdLife Cyprus and Enalia Physis Environmental Research Centre. Nicosia. Pp32. Link: <https://enaliaphysis.org.cy/wp-content/uploads/2021/01/TECHNICAL-REPORT-CYPRUS-WEB-ONE-PAGE.pdf>
- Carpentieri, P., Nastasi, A., Sessa, M. & Srouf, A., eds. 2021. Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review. Studies and Reviews No. 101 (General Fisheries Commission for the Mediterranean). Rome, FAO. Link: <https://doi.org/10.4060/cb5405en>
- Pilot study report on the assessment of incidental catches of vulnerable species from bottom trawl fishery in Cyprus waters (GSA25), as part of the 2019 Cyprus Work Plan on Data Collection. Submitted to DGMARE in 2021 (<https://datacollection.jrc.ec.europa.eu/pilots-study-reports-2017-2019->).
- Data on incidental catches in GSA25, collected under regular biological sampling and through interviews.

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

Based on a combination of the available information on incidental catches mentioned above, the gear types that present the highest risk of bycatch of elasmobranchs in GSA25 are the nets, followed by longlines. The gear types that present the highest risk of bycatch of sea turtles are the nets and the surface longlines. For the rest of PETS it is not considered that there is a high risk of bycatch.

- What are the methods to calculate the observation effort?

Observation effort concerning nets will be calculated in terms of fishing trips, days at sea, and length of nets* soaking time (km*hour). Therefore, observation effort will be calculated for the relevant year as:

- total number of observed trips using nets/ total number of trips using nets
- total number of observed days at sea using nets/ total number of days at sea using nets
- total observed length of nets* soaking time (km*hour)/total length of nets* soaking time (km*hour).

Observation effort concerning longlines will be calculated in terms of number of hooks, and number of hooks*soaking time. Observation effort will be calculated for the relevant years as:

- total number of observed hooks/ total number of hooks used
- total number of observed hooks*soaking time/total number of hooks*soaking time

Observation effort concerning bottom trawl will be calculated in terms of number of hauls, and number of hauls*towing time. Observation effort will be calculated at annual level as:

- total number of observed hauls / total number of hauls
- total observed number of hauls*towing time / total number of hauls* towing time

Observers-at-sea will be required to record in the relevant sampling form for each haul whether they have checked for PETS, in order to distinguish real zero by-catch from not sampled. Visual checks and records will cover separately slipping (for nets and longlines), hauling and sorting.

- 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.

The sampling design and protocol follows the relevant 2019 GFCM manual (Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection. 2019 FAO Fisheries and Aquaculture Technical Paper No. 640. Rome, FAO. This is in agreement with the RCG MED & BS 2021 Recommendation 8.

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

- 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, the on-board observer protocol of bottom trawlers contains a check for rare specimens in the catch at opening of the codend. The observer is instructed to indicate in the relevant sampling form whether the codend was checked in a haul.

- 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?

The on-board observer protocol for recording bycatch from gill nets and bottom longlines is under preparation, since it will be a new sampling activity under 2022-2024 WP and is planned to be carried out in 2023; the protocol will include instructions to observe for bycatches that slip out of the net.

Concerning surface longlines, observers are on the deck during the whole hauling process, and are instructed to observe for bycatches that slip out.

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

There are no conveyor belts in Cyprus fishing vessels; observers are instructed to be present during the whole sorting process of the catch. Observers are instructed to indicate what percentage of the sorting or hauling process has been checked at “haul level”.

Additional information on sampling schemes

As indicated in Table 2.5 and presented in Annex 1.1, on-board observation of incidental catches of sensitive species is foreseen in three on-board sampling schemes at annual level, which concern trawlers targeting demersal species, surface longlines targeting swordfish and surface longlines targeting albacore.

In addition, for the period 2022-2024 a new on-board sampling scheme will be performed in 2023 for collecting information on catches from passive gears targeting demersal species, aiming the collection of information on PETS incidental catches. This fishery is mostly exercised by vessels of 6-12m length, and nets are the main fishing gear used (with or without combination with other gears e.g.,

bottom longlines). With the new on-board sampling scheme, dedicated observation effort will be performed on net fisheries that present the highest risk of bycatch of elasmobranchs in GSA25, and of sea turtles.

Concerning sampling intensity, in the relevant GFCM manual on monitoring incidental catch of vulnerable species (FAO 2019) it is considered that coverage should range from 2% to 7%, although a minimum level of 0.5 % is often accepted; the on-board observations proposed by Cyprus follows this sampling coverage.

It is worth mentioning that the Control Division of DFMR performs annually on-board observations on this fishery, for monitoring Landing Obligation; control observers record all catches including PETS, and this information may be provided to the Data Collection Team.

Apart from on-board observations, Cyprus will continue the collection of information on incidental catches through observers on-shore and interviews.

It is noted that a non-binding RWP for 2023 has been submitted by RCG Med&BS, including regional coordination for the monitoring of incidental catches of sensitive species.

Reference:

FAO. 2019. 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.

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

Results

As presented in Table 2.5, during 2023 information on incidental bycatches was collected during sampling for biological data, from on-board and at shore observations, as well as through interviews. A summary on incidental catches of reptiles, sharks and rays, is provided below. There were no records of incidental catches of birds and mammals. Species reported are the ones included in 2019 GFCM manual (*Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection. 2019 FAO Fisheries and Aquaculture Technical Paper No. 640. Rome, FAO.*) Information on incidental catches during 2023 has / will be submitted to GFCM and other end-users.

2023 recorded incidental catches:

- Reptiles: *Chelonia mydas* (2 individuals) and *Caretta caretta* (4 individuals) from 3 different sampling schemes
- Sharks and rays: *Squatina squatina* (1), *Gymnura altavela* (7) from 1 sampling scheme, *Dasyatis* spp from 3 different sampling schemes, *Raja brachyura* (1), *Raja polystigma* (3) from 1 sampling scheme, and *Raja radula* (1).

It is noted that during 2022 a non-binding Regional Work Plan (RWP) for 2023 was submitted by RCG Med&BS, including regional coordination for the monitoring of incidental catches of sensitive species.

Deviations from the work plan

As indicated in Table 2.5, during 2023 a new sampling scheme for demersal fishery with passive gears was performed (SciObsAtSea*Commercial fishing trip*all species caught with PG_DEF), and there was a high divergence among planned and achieved PSUs. Reasons for this divergence was the

fact that fishermen were reluctant to have observers on board, while sampling was also cancelled due to weather conditions.

There was also deviation from the work plan concerning the two onboard sampling schemes for drifting longline targeting SWO and ALB, which concern vessels of the same fleet segment. Though vessels in these frames are at least 15m long, it was realised that not all of them fulfil basic safety and hygienic criteria for having observers on board. Furthermore, there were vessels with low fishing activity as well as vessel owners reluctant to accept observers. For these reasons, the achieved number of vessels sampled were lower than planned (in both cases by one PSU).

Actions to avoid deviations

It was decided that the new sampling scheme for demersal fishery with passive gears will be performed also during 2024, for sampling the planned number of trips. During the second year of implementation, observers on board are the same personnel involved in the sampling of this fishery at landing sites, therefore there is a good communication among observers and fishermen, and fishermen are less reluctant to accept observers on board.

Concerning the two onboard sampling schemes for drifting longline targeting SWO and ALB, effort will be made for having better and more frequent communication with relevant fishermen, for evaluating the availability of the vessels during the sampling period and ensuring all planned PSUs will be sampled.

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

Text Box 4.3: Fisheries impact on marine habitats

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

Name of the study: Mapping of trawling activity in GSA 25

1. Aim of the study

The aim of the study is the mapping of trawling activity in GSA 25 and the identification of areas that are mostly impacted on the trawling activity.

2. Duration of the study

The study will be carried out between 2022-2024. Specifically, data will be collected and analysed from 2022 and 2023. The outcomes of the study are expected by the end of 2024.

3. Methodology and expected outcomes of the study

For the years 2022 and 2023, VMS data from trawling activity in GSA25 will be used, as well as ERS data of the Cyprus fishing vessels involved in trawling activity in the area, for ensuring the correct allocation of activity to trawling. VMS data will be processed for distinguishing records associated with fishing and not fishing.

By analysing VMS data, the following are expected:

- Computation and mapping of spatial and temporal extent of trawl fishing activity
- Estimation of trawled area
- Evaluation of possible changes in the distribution of trawl fishing activity

- Review of spatial trawl fishing activity in relation with the abundance of demersal fisheries resources and possible identification of VME indicator taxa (provided through Medits survey).

(max 900 words per study)

Name of the study: Mapping of trawling activity in GSA 25

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

The 2023 VMS data of the trawlers operating in GSA25 are available for analysis, which will be performed, as planned, during 2024.

Achievement of the original expected outcomes and justification if this was not the case.

The 2023 VMS data for mapping trawling activity in GSA 25 are available to the DFMR Data collection team, as planned.

Follow-up to the activities (what are the next steps, how the results will be used).

Not applicable for 2023, since the analysis will be performed in 2024.

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

According to Data Collection Framework (DCF), the vessel length (in meters) in the Mediterranean Sea is categorized into the following groups: 0-6m, 6-12m, 12-18m, 18-24m, 24-40m and above 40m. Four main fishing technique categories are used in Cyprus, which are: vessels using passive gears only for vessels <12m (PG), vessels using polyvalent passive gears only (PGP), demersal trawlers (DTS) and a licence category that was introduced by law in 2009, which represents the segments Polyvalent "passive gears only" (category C licences) (PGO). Based on the Cyprus law the fishing activity is performed on a periodic basis. This new category cannot be integrated with the existing segments of Vessels using Polyvalent passive gears only' below 12m since the data of previous years would not be comparative and we would face problems of bias.

Polyvalent "passive gears only" (category C licenses) (PGO) has a total population of 417 vessels. In 0-<6m length group (PGO0006) there are 344 vessels, and 6-<12m length group (PGO0612) includes 73 vessels. For this fleet segmentation clustering is not necessary.

Similarly, for vessels using passive gears only <12m there is no need for clustering, since they are divided into two subcategories as follows: vessels using passive gears only 0-<6m (PG0006) which includes 28 vessels and vessels using passive gears only 6-<12m (PG0612) with 298 vessels.

Furthermore, our fleet includes 32 polyvalent vessels using passive gears over 12 m (PGP) in 12-<18m length class, 4 vessels in 18-<24m length class and 1 vessels in 24-<40m length class. Because of the small population of the two length groups and for sampling purposes and confidentiality reasons, all polyvalent vessels using passive gears over 12 m (PGP) are included in a single category, 12-<18m. Length groups 12-<18m, 18-<24m and 24-<40m are involved in inshore fishery activities and they also perform longer trips since they target swordfish, albacore and Bluefin tuna. Therefore 18-<24m and 24-<40m polyvalent vessels are similar to 12-<18m vessels. The cost structure of the clustered segments does not change much and the clustering will not create any problems of bias.

Due to the very small number of demersal trawlers (DTS) below 24m (2 vessels) they could be regrouped in the 24-<40m length group (4 vessels), since they are similar and to ensure the consistency of data from previous years. Both groups are engaged in the same metier and they target the same group of species with the same gear despite their vessels' length. Although, all lengths of demersal trawlers have been grouped, their total population (=6) has a low number. However, further clustering will not take place due to the fact that demersal trawlers can give different economic data from other fleets.

2. Description of activity indicator

The fishing activity of vessels using polyvalent passive gears only (category C licences) is performed on a periodic basis since they are allowed to fish only a total of approximately 100 days each year, under a new national legislation. According to this law, they are allowed to fish only on Saturdays and Sundays during the months of February, March, April, September, October, November and December. While in the months of June, July and August they can fish on Saturdays, Sundays and Wednesdays.

Also, most of the fish produced by this segment is kept for self-consumption. Consequently, their income from fisheries activities is too low. Thus, this new category, which represents the segments Polyvalent "passive gears only" 0-<6m (category C licences) and Polyvalent "passive gears only" 6-<12m (category C licences) has low activity vessels.

The economic activity of the other segments is normal, since there are no restrictions on their fishing effort.

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.

The minimum wage is not available in our data, so in order to distinguish between active and less active vessels we consider fishing effort according to our legislation. Therefore, vessels classified as low active enjoy lower value of unpaid labour than vessels with normal activity.

(max. 900 words)

Deviations from the work plan

No deviations from the Work Plan.

Actions to avoid deviations

Not applicable.

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

Based on the latest (2019) EU aquaculture production reported to the EUROSTAT, the Cyprus production is 0.64% of the total EU aquaculture production.

EUROSTAT Data on EU aquaculture production are available at the following link:

<https://ec.europa.eu/eurostat/web/fisheries/data/database>

Considering the thresholds defined in Chapter II point 7 of Commission Implementing Decision (EU) 2021/1168 Annex concerning aquaculture, Cyprus does not intend to proceed with the collection and submission of economic and social data on aquaculture.

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.

Not applicable

(max. 900 words)

Deviations from the work plan

Not applicable.

Actions to avoid deviations

Not applicable.

(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’.

SciObsAtSea*Commercial fishing trip*All species caught with LLD_SWO

MS : CYP
Region: Mediterranean and Black Sea
Sampling scheme identifier: SciObsAtSea*Commercial fishing trip*All species caught with LLD_SWO
Sampling scheme type: Commercial fishing trip
Observation type: SciObsAtSea
Time period of validity: from 2022 until 2024
Short description (max 100 words): This sampling scheme aims at collecting length samples and discards from catches at-sea for all species listed in Table 1 of the EU MAP Delegated Decision annex and also PETS species, that are caught with surface longlines targeting swordfish. This sampling scheme aims also at collecting biological variables (weight, sex, maturity) from swordfish, albacore and bluefin tuna when they are gutted at sea. It is noted that the fishery is closed from 1 January – 31 March, and during summer months the activity is limited, since the vessels are engaged in the albacore fishery. Around 12 vessels are involved in this fishery.
Description of the population
Population targeted: All catches made by the Cyprus licensed vessels operating with drifting longlines targeting swordfish. The primary sampling unit (PSU) is vessel. Population sampled: Scientific on-board observation will cover catches of Cyprus vessels operating with drifting longlines targeting swordfish, which have minimum length 15m and land in Cyprus. It is noted that from 2022 all vessels targeting swordfish will be landing in Cyprus. Vessels with length less than 15m are excluded; due to their limited space there are difficulties in accommodating observers and there are also safety risks during fishing operation practices.

Stratification: No stratification is planned.
Sampling design and protocols
Sampling design description: The target event is 4 sampled trips. The sampling allocation is defined as follows: A list of vessels with a minimum length of 15m that are engaged in swordfish fishery is made, based on their fishing license and previous fishing activity from ERS records; this list contains around 10 vessels. Vessels from this list are randomly ranked, and the first 4 are selected. Months of swordfish fishing activity are also listed based on previous fishing activity from ERS records, and randomly ranked; the first 4 months are selected. Pairs of vessels – months are made based on the ranking (e.g. first vessel selected is paired with first month selected). For each combination of vessel – month selected, a further random selection is made for selecting the fortnight; the first convenient (based on vessel availability) trip to sample within the fortnight is sampled. During the sampled trip all hauls will be sampled, in which all individuals will be recorded and sampled. In previous WPs, trips were selected by randomly selecting dates; following communication with the relevant vessel owners, the trips closest to the selected dates were sampled. It has been proved in practice that it is difficult to follow such sampling design, because usually vessels arrive at ports soon after the fishing trip is finished, and may start a new fishing trip at the same day. Also, a small number of vessels is involved in this fishery, and each one may use a different landing site. Furthermore, we consider that when the vessel is not defined, there is a risk of introducing bias from observer convenience. It has been proved that it is easier to follow a sampling design when vessels are selected first, allowing the observes to communicate better with the owners / captains and to have adequate time for arranging for the trips to be sampled. Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed. Regional coordination: The sampling design and protocol was not developed as part of a regional or multi-lateral agreement. Link to sampling design documentation: The documentation is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument Compliance with international recommendations: Y (https://www.iccat.int/en/iccatmanual.html) Link to sampling protocol documentation: The documentation is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument Compliance with international recommendations: Y (https://www.iccat.int/en/iccatmanual.html)
Sampling implementation
Recording of refusal rate: Y.
Monitoring of sampling progress within the sampling year:

As mentioned before, vessels engaged in swordfish fishery are listed and randomly selected; in the case a selected vessel is not active during the period it was selected, then it is replaced by the first vessel in the ranking that has not been selected for sampling. Results from random selection are recorded, as well as the adjustments made, if any. It is noted that the Data Collection Team has real time access to the ERS and VMS system, and good communication with fishing vessel owners/captains; the information on fishing activity is always available, for making adjustments.

Data capture

Means of data capture:

The means used for collecting the data include a scale with range from 1g to 300 kg, a flexible measuring tape, and a measuring board tape. Observers are also instructed to take photos, especially in the case of PETS occurrence. Data are recorded in the relevant templates available for this sampling scheme.

Data capture documentation: Data capture documentation is available at the following link: <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58?OpenDocument>

Quality checks documentation: Y

Quality checks on data capture are made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021.

Reference:

ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.

Data storage

National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data.

International database: ICCAT statistical databases, available at <https://www.iccat.int/en/accesingdb.html>)

Quality checks and data validation documentation: Y

MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>)

Sample storage

Storage description: No sample storage is done from this sampling scheme.

Sample analysis: No sample storage and relevant analysis is done from this sampling scheme, all biological data are collected on-board.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKAACCU/wkaccu_2008.pdf.

Evaluation of precision of length is based on methods described under MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies” (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>) .

Editing and imputation methods: Y

<https://iccat.int/Documents/SCRS/Manual/CH4/CH4-ENG.pdf>

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

No.

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

Under MARE/2016/22 RECOLAPE WP5, data-quality assessment procedures have been developed at national and regional level, which will be consulted before providing data to end-user (ICCAT). Furthermore, the statistical forms used for providing data to ICCAT include codes, instructions and drop-down lists of codes, for facilitating the provision of data using the correct format.

AR comment:

Concerning population sampled, though vessels in this frame are at least 15m long, it was realised that not all of them fulfil basic safety and hygienic criteria for having observers on board. Therefore, vessels not fulfilling such basic criteria were removed from this frame as well.

Regarding sampling design, there was a deviation concerning the number of sampled trips. Specifically, 3 trips were sampled instead of 4. As indicated in Table 2.5, during 2023 LLD_SWO fishing activity concerned 47 trips, of which more than half were performed during September - October while from April until August fishing activity rank from 0 to 6 trips at monthly level.

In order to avoid deviations in the number of sampled trips in the future, the DCF team will follow more closely the fishing activity of vessels involved in swordfish fishery, so that the planned PSUs will be achieved even with lower fishing activity.

Sampling implementation: Due to the limited fishing activity, the selection of the vessel to be sampled was based on the availability and suitability of vessels.

Apart from the above, there were no other deviations.

**SciObsOnShore*Commercial fishing trip*list of commercial species caught with
LLD_SWO**

MS : CYP
Region: Mediterranean and Black Sea
Sampling scheme identifier: SciObsOnShore*Commercial fishing trip*list of commercial species caught with LLD_SWO
Sampling scheme type: Commercial fishing trip
Observation type: SciObsOnShore
Time period of validity: from 2022 until 2024
Short description (max 100 words): This sampling scheme aims at collecting length samples from landings from all commercial species listed in Table 1 of the EU MAP Delegated Decision annex, that are caught with surface longlines targeting swordfish. The sampling scheme aims also at collecting weight from swordfish, albacore and bluefin tuna, recording the relevant presentation of the individuals. It is noted that the fishery is closed from 1 January - 31 March, and during summer months the activity is limited, since the vessels are engaged in the albacore fishery. Around 12 vessels are involved in this fishery.
Description of the population
Population targeted: All landings made by the Cyprus licensed vessels operating with drifting longlines targeting swordfish. The primary sampling unit (PSU) is vessel. Population sampled: Scientific observation on shore will cover all catches of Cyprus vessels operating with drifting longlines targeting swordfish and landing in Cyprus. It is noted that from 2022 all vessels targeting swordfish will be landing in Cyprus. Stratification: No stratification is planned.
Sampling design and protocols
Sampling design description: The target is 6 sampled trips (1 for every month of fishing activity of this fishery). The sampling allocation is defined as follows: A list of vessels that are engaged in swordfish fishery is made, based on their fishing license and previous fishing activity from ERS records; a vessel from this list is randomly selected with replacement every month the fishery is active (1 vessel selected per month). For selecting the sampled trip, for each month a random selection is made on the fortnight; the first convenient trip (based on vessel availability) within the selected fortnight is sampled. During the sampled trip all individuals will be recorded and sampled. In previous WPs, trips were selected by randomly selecting dates; following communication with the relevant vessel owners, the trips closest to the selected dates were sampled. It has been proved in practice that it is difficult to follow such sampling design, because usually vessels arrive at ports soon after the fishing trip is finished, and may start a new fishing trip at the same day. Also, a small number of vessels is involved in this fishery, and each one may land in a different landing site. Furthermore, we consider that when the vessel is not defined, there is a risk of introducing bias from observer convenience. It has been proved that it is easier to follow a sampling design when vessels are selected

first, allowing the observers to communicate better with the owners / captains and to have adequate time for arranging for the trips to be sampled.

Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed.

Regional coordination: The sampling design and protocol was not developed as part of a regional or multi-lateral agreement.

Link to sampling design documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.iccat.int/en/iccatmanual.html>)

Link to sampling protocol documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.iccat.int/en/iccatmanual.html>)

Sampling implementation

Recording of refusal rate: Y.

Monitoring of sampling progress within the sampling year:

As mentioned before, vessels engaged in swordfish fishery are listed and randomly selected; in the case a selected vessel is not active during the period it was selected, then it is replaced by the first vessel in the ranking that has not been selected for sampling. Results from random selection are recorded, as well as the adjustments made, if any. It is noted that the Data Collection Team has real time access to the ERS and VMS system, and the information on fishing activity is always available, for making adjustments.

Data capture

Means of data capture:

The means used for collecting the data include a scale with range from 1g to 300 kg, a flexible measuring tape, and a measuring board tape. Data are recorded in the relevant templates available for this sampling scheme.

Data capture documentation: Data capture documentation is available at the following link: <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58?OpenDocument>

Quality checks documentation: Y

Quality checks on data capture are made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021.

Reference:

ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.

Data storage

National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data.

International database: ICCAT statistical databases, available at <https://www.iccat.int/en/accesingdb.html>)

Quality checks and data validation documentation: Y

MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>)

Sample storage

Storage description: No sample storage is done from this sampling scheme.

Sample analysis: No sample storage and relevant analysis is done from this sampling scheme, all biological data are collected on-board.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf.

Evaluation of precision of length is based on methods described under MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies” (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>).

Editing and imputation methods: Y

<https://iccat.int/Documents/SCRS/Manual/CH4/CH4-ENG.pdf>

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?
No.

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

Under MARE/2016/22 RECOLAPE WP5, data-quality assessment procedures have been developed at national and regional level, which will be consulted before providing data to end-user (ICCAT). Furthermore, the statistical forms used for providing data to ICCAT include codes, instructions and drop-down lists of codes, for facilitating the provision of data using the correct format.

AR comment:

Concerning population sampled, during 2022 one vessel targeting swordfish started operating in the Adriatic, therefore it was removed from the population sampled.

Sampling design: due to the irregular fishing activity, during the relatively active months more than one fishing trip was sampled, in order to achieve the planned number of trips. Due to the very low fishing activity from April to August, sampling concerned the period September-December.

Sampling implementation: As mentioned above, due to the irregular fishing activity, adjustments were made for achieving the planned number of trips.

Apart from the above, there were no other deviations.

SciObsAtSea*Commercial fishing trip*All species caught with LLD_ALB

MS : CYP

Region: Mediterranean and Black Sea

Sampling scheme identifier: SciObsAtSea*Commercial fishing trip*All species caught with LLD_ALB

Sampling scheme type: Commercial fishing trip

Observation type: SciObsAtSea

Time period of validity: from 2022 until 2024

Short description (max 100 words):

This sampling scheme aims at collecting length samples and discards from catches at-sea for all species listed in Table 1 of the EU MAP Delegated Decision annex and also PETS species, that are caught with surface longlines targeting albacore. This sampling scheme aims also at collecting biological variables (weight, sex, maturity) from swordfish, albacore and bluefin tuna when they are gutted at sea.

It is noted that the fishery is seasonal, with a period from June to August and main activity in July and engages around 32 vessels.

Description of the population

Population targeted: All catches made by the Cyprus licensed vessels operating with drifting longlines targeting albacore. The primary sampling unit (PSU) is vessel x trip.

Population sampled: Scientific on-board observation will cover catches of Cyprus vessels that land in Cyprus and have a minimum length of 15m. It is noted that all vessels targeting albacore land their catch in Cyprus. Vessels with length less than 15m are excluded; due to their limited space there are difficulties in accommodating observers and there are also safety risks during fishing operation practices.

Stratification: No stratification is planned.

Sampling design and protocols

Sampling design description:

The target event is 7 trips. The sampling allocation is defined as follows:

A list of vessels with a minimum length of 15m that are engaged in albacore fishery is made, based on their fishing license and previous fishing activity from ERS records; this list usually contains around 13 vessels. A single random draw is performed from the relevant list, for selecting the first 7 vessels that will be sampled. In order to determine the dates for each vessel x trip, a second draw is performed for randomly selecting and assigning the sampled trip.

In previous WPs, trips were selected by randomly selecting dates; following communication with the relevant vessel owners, the trips closest to the selected dates were sampled. It has been proved in practice that it is difficult to follow such sampling design, because usually vessels arrive at ports soon after the fishing trip is finished, and may start a new fishing trip at the same day. Furthermore, we consider that when the vessel is not defined, there is a risk of introducing bias from observer convenience. It has been proved that it is easier to follow a sampling design when vessels are selected first, allowing the observers to communicate better with the owners / captains and to have adequate time for arranging for the trips to be sampled.

Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed.

Regional coordination: The sampling design and protocol was not developed as part of a regional or multi-lateral agreement.

Link to sampling design documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.iccat.int/en/iccatmanual.html>)

Link to sampling protocol documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.iccat.int/en/iccatmanual.html>)

Sampling implementation

Recording of refusal rate: Y.

Monitoring of sampling progress within the sampling year:

As mentioned before, vessels engaged in albacore fishery are listed and randomly selected; in the case a selected vessel is not active, then it is replaced by the first vessel in the ranking that has not been selected for sampling. Results from random selection are recorded, as well as the adjustments made, if any. It is noted that the Data Collection Team has real time access to the ERS and VMS system, and good communication with fishing vessel owners/captains; the information on fishing activity is always available, for making adjustments.

Data capture**Means of data capture:**

The means used for collecting the data include a scale with range from 1g to 300 kg, a flexible measuring tape, and a measuring board tape. Observers are also instructed to take photos, especially in the case of PETS occurrence. Data are recorded in the relevant templates available for this sampling scheme.

Data capture documentation: Data capture documentation is available at the following link: <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58?OpenDocument>

Quality checks documentation: Y

Quality checks on data capture are made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021.

Reference:

ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.

Data storage

National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data.

International database: ICCAT statistical databases, available at <https://www.iccat.int/en/accesingdb.html>)

Quality checks and data validation documentation: Y

MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>)

Sample storage

Storage description: Sample storage concerns age structures collected for *Thunnus alalunga*, which are stored in the DFMR Headquarters in spaces used by the Data Collection Team. The number collected is small, considering that based on Large Pelagic user needs received, the required age data are: T (20/1000t) on a triennial basis.

Sample analysis:

The ICCAT manual includes information on sampling, preparation and reading of age structures of large pelagic (https://www.iccat.int/Documents/SCRS/Manual/CH4/CH4_9-ENG.pdf).

The following manual is also consulted: Carbonara, P., Follesa, M.C., eds. 2019. Handbook on fish age determination: a Mediterranean experience. Studies and Reviews. No. 98. Rome, FAO. 2019. 192 pp. <https://www.fao.org/3/ca2745en/CA2745EN.pdf>. The relevant manual includes information on preparation of age structures and age estimation of *T. alalunga*.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKAACCU/wkaccu_2008.pdf.

Evaluation of precision of length is based on methods described under MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies” (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>) .

Editing and imputation methods: Y

<https://iccat.int/Documents/SCRS/Manual/CH4/CH4-ENG.pdf>

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?
No.

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

Under MARE/2016/22 RECOLAPE WP5, data-quality assessment procedures have been developed at national and regional level, which will be consulted before providing data to end-user (ICCAT). Furthermore, the statistical forms used for providing data to ICCAT include codes, instructions and drop-down lists of codes, for facilitating the provision of data using the correct format.

With regards to the statistical evaluation of the sampling plan of pelagic fishery, data sets for Albacore onboard have been uploaded to ICES RDBES platform (Regional Database and Estimation System) and their evaluation is expected to be completed with codes that will be developed by the ICES WKRDBES EST2.

AR comment:

Concerning population sampled, vessels over 15m length that did not fulfill basic safety and hygienic criteria were removed from the frame.

Regarding sampling design, there was a deviation concerning the number of sampled trips. Specifically, 6 trips were sampled instead of 7. As indicated in Table 2.5, though vessels in this frame are at least 15m long, it was realised that not all of them fulfil basic safety and hygienic criteria for having observers on board. Furthermore, not all vessels in this frame were active during the whole fishery season. For these reasons, there was deviation on achieved PSUs by one.

To avoid deviations in the number of sampled trips in the future, the DCF team will follow more closely the fishing activity of vessels involved in swordfish fishery, so that the planned PSUs will be achieved even with lower fishing activity.

Apart from the above, there were no deviations.

SciObsOnShore*Commercial fishing trip*list of commercial species caught with LLD_ALB

MS : CYP
Region: Mediterranean and Black Sea
Sampling scheme identifier: SciObsOnShore*Commercial fishing trip*list of commercial species caught with LLD_ALB
Sampling scheme type: Commercial fishing trip
Observation type: SciObsOnShore
Time period of validity: from 2022 until 2024
Short description (max 100 words): Sampling scheme aiming at collecting length samples from landings from all commercial species listed in Table 1 of the EU MAP Delegated Decision annex that are caught with surface longlines targeting albacore. This sampling scheme aims also at collecting weight from swordfish, albacore and bluefin tuna, recording the relevant presentation of the individuals. The fishery is seasonal, with a period from June to August and engages around 32 vessels.
Description of the population
Population targeted: All landings made by the Cyprus licensed vessels operating with drifting longlines targeting albacore. The primary sampling unit (PSU) is vessel. Population sampled: Scientific observation on shore will cover landings of Cyprus vessels that land in Cyprus. It is noted that all vessels targeting albacore land their catch in Cyprus. Stratification: No stratification is planned.
Sampling design and protocols
Sampling design description: The target event is 12 trips, with 4 sampled trips per month of fishing activity (June, July, August), and more specifically 2 sampled trips per fortnight. The sampling allocation is defined as follows: A list of vessels engaged in albacore fishery is made, based on their fishing license and previous fishing activity from ERS records. A random selection is performed each month to determine the 4 vessels for which dedicated landing events will be sampled. An additional draw is made for each fortnight, for selecting 2 dates for each fortnight. As a fixed design, the first vessel to be drawn will be linked with the sampling of the first landing event of that month. Each subsequent selected vessel will be matched with the next landing event.

Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed.

Regional coordination: The sampling design and protocol was not developed as part of a regional or multi-lateral agreement.

Link to sampling design documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.iccat.int/en/iccatmanual.html>)

Link to sampling protocol documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument> ,
<http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/5C667104B416A5A0C22586C500320E18?OpenDocument>

Compliance with international recommendations: Y (<https://www.iccat.int/en/iccatmanual.html>)

Sampling implementation

Recording of refusal rate: Y.

Monitoring of sampling progress within the sampling year:

As mentioned before, vessels engaged in albacore fishery are listed and randomly selected; in the case a selected vessel is not active during the period it was selected (this may happen at the beginning and at the end of the season), then it is replaced by the first vessel in the ranking that has not been selected for sampling. Results from random selection are recorded, as well as the adjustments made, if any. It is noted that the Data Collection Team has real time access to the ERS and VMS system, and good communication with fishing vessel owners/captains; the information on fishing activity is always available, for making adjustments.

Data capture

Means of data capture:

The means used for collecting the data include a scale with range from 1g to 300 kg, a flexible measuring tape, and a measuring board tape. Data are recorded in the relevant templates available for this sampling scheme.

Data capture documentation: Data capture documentation is available at the following link: <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58?OpenDocument>

Quality checks documentation: Y

Quality checks on data capture are made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021.

Reference:

ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.

Data storage

National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data.

International database: ICCAT statistical databases, available at <https://www.iccat.int/en/accesingdb.html>)

Quality checks and data validation documentation: Y

MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>)

Sample storage

Storage description: Sample storage concerns age structures collected for *Thunnus alalunga*, which are stored in the DFMR Headquarters in spaces used by the Data Collection Team. The number collected is small, considering that based on Large Pelagic user needs received, the required age data are: T (20/1000t) on a triennial basis.

Sample analysis:

The ICCAT manual includes information on sampling, preparation and reading of age structures of large pelagic (https://www.iccat.int/Documents/SCRS/Manual/CH4/CH4_9-ENG.pdf).

The following manual is also consulted: Carbonara, P., Follesa, M.C., eds. 2019. Handbook on fish age determination: a Mediterranean experience. Studies and Reviews. No. 98. Rome, FAO. 2019. 192 pp. <https://www.fao.org/3/ca2745en/CA2745EN.pdf>. The relevant manual includes information on preparation of age structures and age estimation of *T. alalunga*.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf.

Evaluation of precision of length is based on methods described under MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies” (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>) .

Editing and imputation methods: Y

<https://www.iccat.int/Documents/SCRS/Manual/CH4/CH4-ENG.pdf>

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?
No.

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

Under MARE/2016/22 RECOLAPE WP5, data-quality assessment procedures have been developed at national and regional level, which will be consulted before providing data to end-user (ICCAT). Furthermore, the statistical forms used for providing data to ICCAT include codes, instructions and drop-down lists of codes, for facilitating the provision of data using the correct format.

With regards to the statistical evaluation of the sampling plan of pelagic fishery, data sets for Albacore onshore have been uploaded to ICES RDBES platform (Regional Database and Estimation System) and their evaluation is expected to be completed with codes that will be developed by the ICES WKRDBES EST2.

AR comment: There were no deviations.

SciObsAtSea*Commercial fishing trip*all species caught with OTB_DEF

MS : CYP
Region: Mediterranean and Black Sea
Sampling scheme identifier: SciObsAtSea*Commercial fishing trip*all species caught with OTB_DEF
Sampling scheme type: Commercial fishing trip
Observation type: SciObsAtSea
Time period of validity: from 2022 until 2024
Short description (max 100 words): This sampling scheme aims at collecting length samples and discards from catches at-sea for all species listed in Table 1 of the EU MAP Delegated Decision annex and also PETS species, that are caught with bottom trawler targeting demersal species in GSA25. This sampling scheme aims also at collecting samples for biological variables (age, weight, sex, maturity) for 5 demersal species, whenever possible. It is noted that the fishery is open for around 7 months, since there is an annual closed period from 1 June until 7 November. Only 2 vessels are engaged in this fishery.
Description of the population
Population targeted: All catches made by the Cyprus licensed vessels operating with bottom trawl targeting demersal species in GSA25. The primary sampling unit (PSU) is vessel. Population sampled: All part of the target population will be sampled. Stratification: No stratification is planned.

Sampling design and protocols
Sampling design description: The target is to sample 7 trips, allocating 1 sampled trip to each month of fishing activity. The sampling allocation is defined as follows: Considering that there are only two licensed vessels involved in this fishery, systematic sampling will be followed for selecting the vessel. Having in mind that fishing trips have an average duration of 2 fishing days and usually fishing trips are continuous, within each month a week will be randomly chosen for selecting the first convenient (based on vessel availability) trip to be sampled. During the sampled trip all hauls having an odd number (1,3,5...) will be sampled; this fixed selection has been decided for avoiding convenience decisions from observers. For each sampled haul, simple random sampling will be performed for the selection of i. Boxes to be sampled by species and by commercial category, in the case there are more than one box, ii. Individual fish to be length-sampled by box and iv. Individual fish to be collected for biological variables (age, weight, sex and maturity), through length-stratified sub-sampling (if allowed by the captain). Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed. Regional coordination: The sampling design and protocol was not developed as part of a regional or multi-lateral agreement. Link to sampling design documentation: The documentation is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument Compliance with international recommendations: Y ((https://www.fao.org/gfcm/data/dcrf) Link to sampling protocol documentation: The documentation is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument Compliance with international recommendations: Y (https://www.fao.org/gfcm/data/dcrf)
Sampling implementation
Recording of refusal rate: Y. Monitoring of sampling progress within the sampling year: Considering that only two fishing vessels are involved in this fishery, it is easy to monitor sampling progress; however, in the case a vessel is not available for sampling, there is only one vessel left that is available. In the case vessel owners will refuse to receive observers on-board, efforts will be made by DFMR for resolving such problem. A mitigation measure to be considered is the collection of discard samples by the crew, accompanied with photos, to be delivered to observers on-shore.
Data capture
Means of data capture:

The means used for collecting the data include a scale, a flexible measuring tape, a calliper and a measuring board. Observers are also instructed to take photos, especially in the case of PETS occurrence. Data are recorded in the relevant templates available for this sampling scheme.

Data capture documentation: Data capture documentation is available at the following link: <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58?OpenDocument> and <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/5C667104B416A5A0C22586C500320E18?OpenDocument>

Quality checks documentation: Y

Quality checks on data capture are made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021.

Reference:

ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.

Data storage

National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data.

International database: NA.

Relevant data are transmitted to GFCM and may become available at DCRF online platform (<https://www.fao.org/gfcm/data/dcrf/platform>), to DGMARE/JRC and also to ICES (WGBYC) concerning PETS.

Quality checks and data validation documentation: Y

MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>)

Sample storage

Storage description: Otoliths extracted from samples collected for biological variables are stored as whole in Eppendorf tubes, which are stored in the DFMR Headquarters in spaces used by the Data Collection Team. All otoliths collected are kept stored. Each year around 300 otoliths by relevant species of GSA25 are collected from commercial fisheries.

Sample analysis:

For age reading the following manual is consulted: Carbonara, P., Follesa, M.C., eds. 2019. Handbook on fish age determination: a Mediterranean experience. Studies and Reviews. No. 98. Rome, FAO. 2019. 192 pp. <https://www.fao.org/3/ca2745en/CA2745EN.pdf> . The relevant manual includes all demersal species for which otoliths are collected from GSA25 (*Boops boops*, *Mullus barbatus*, *M.*

surmuletus, *Pagellus erythrinus* and *Spicara smaris*). For the two *Mullus* species, the report from ICES Workshop on Ageing Validation methodology (ICES.2017) is also considered.

Reference:

ICES.2017. Workshop on Ageing Validation methodology of *Mullus* species (WKVALMU), 15-19 May 2017, Conversano, Italy. ICES CM 2017/ SSGIEOM:31. 74pp.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf.

Evaluation of precision of length and other biological variables is based on methods described under STREAM MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies”.

(<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>) .

Editing and imputation methods: N

A manual has not been prepared yet.

The estimation of the length composition of the catches is made using the analytical methods described in the ICES Workshop on Sampling and Calculation Methodology for Fisheries Data – WKSCMFD. Age distribution is calculated using the estimated length frequency distribution of landings and the age-length keys (ALKs), based on analytical methods.

Cyprus awaits for the development of estimation routines for the RDBES on stock variables, which will be followed.

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

No.

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

Quality checks developed under MARE/2016/22 STREAM project Deliverable 6.1 are used before providing data to end-users.

AR comment:

There were no deviations.

**SciObsOnShore*Commercial fishing trip*list of commercial species caught with
OTB_DEF**

MS : CYP
Region: Mediterranean and Black Sea
Sampling scheme identifier: SciObsOnShore*Commercial fishing trip*list of commercial species caught with OTB_DEF
Sampling scheme type: Commercial fishing trip
Observation type: SciObsOnShore
Time period of validity: from 2022 until 2024
Short description (max 100 words): This sampling scheme aims at collecting length samples from landings for all commercial species listed in Table 1 of the EU MAP Delegated Decision annex, that are caught with bottom trawler targeting demersal species in GSA25. This sampling scheme aims also at collecting samples for biological variables (age, weight, sex, maturity) for 5 demersal species, whenever possible. It is noted that the fishery is open for around 7 months, since there is an annual closed period from 1 June until 7 November. Only 2 vessels are engaged in this fishery.
Description of the population
Population targeted: All catches made by the Cyprus licensed vessels operating with bottom trawl targeting demersal species in GSA25. The primary sampling unit (PSU) is vessel. Population sampled: All part of the target population will be sampled. Stratification: No stratification is planned.
Sampling design and protocols
Sampling design description: The target is to sample 7 trips, allocating 1 sampled trip to each month of fishing activity. The sampling allocation is defined as follows: Considering that there are only two licensed vessels involved in this fishery and that systematic sampling will be applied for on-board sampling, vessels will be sampled on-shore systematically. The first vessel to be sampled on-shore will be the vessel that has not been selected first for onboard sampling. Within each month a week will be randomly chosen for selecting the first convenient (based on vessel availability) trip to be sampled. During the sampled trip simple random sampling will be performed for the selection of i. Boxes to be sampled (by species by commercial category), ii. Individual fish to be length-sampled by box and iv. Individual fish to be collected for biological variables (age, weight, sex and maturity), through length-stratified sub-sampling (if allowed by the owner). Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed.

Regional coordination: The sampling design and protocol was not developed as part of a regional or multi-lateral agreement.

Link to sampling design documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.fao.org/gfcm/data/dcrf>)

Link to sampling protocol documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.fao.org/gfcm/data/dcrf>)

Sampling implementation

Recording of refusal rate: Y.

Monitoring of sampling progress within the sampling year:

Considering that only two fishing vessels are involved in this fishery, it is easy to monitor sampling progress. Since both vessels perform continuous fishing trips with average duration 2 days, no problems are expected to perform the planned sampling scheme.

Data capture

Means of data capture:

The means used for collecting the data include a scale, a flexible measuring tape, a calliper and a measuring board. Observers are also instructed to take photos, whenever considered useful. Data are recorded in the relevant templates available for this sampling scheme.

Data capture documentation: Data capture documentation is available at the following link: <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58?OpenDocument> and <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/5C667104B416A5A0C22586C500320E18?OpenDocument>

Quality checks documentation: Y

Quality checks on data capture are made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKA%20CCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021.

Reference:

ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.

Data storage

National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data.

International database: NA.

Relevant data are transmitted to GFCM and may become available at DCRF online platform (<https://www.fao.org/gfcm/data/dcrf/platform>), to DGMARE/JRC and also to ICES (WGBYC) concerning PETS.

Quality checks and data validation documentation: Y

MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>)

Sample storage

Storage description: Otoliths extracted from samples collected for biological variables are stored as whole in Eppendorf tubes, which are stored in the DFMR Headquarters in spaces used by the Data Collection Team. All otoliths collected are kept stored. Each year around 300 otoliths by relevant species of GSA25 are collected from commercial fisheries.

Sample analysis:

For age reading the following manual is consulted: Carbonara, P., Follesa, M.C., eds. 2019. Handbook on fish age determination: a Mediterranean experience. Studies and Reviews. No. 98. Rome, FAO. 2019. 192 pp. <https://www.fao.org/3/ca2745en/CA2745EN.pdf> . The relevant manual includes all demersal species for which otoliths are collected from GSA25 (*Boops boops*, *Mullus barbatus*, *M. surmuletus*, *Pagellus erythrinus* and *Spicara smaris*). For the two *Mullus* species, the report from ICES Workshop on Ageing Validation methodology (ICES.2017) is also considered.

Reference:

ICES.2017. Workshop on Ageing Validation methodology of *Mullus* species (WKVALMU), 15-19 May 2017, Conversano, Italy. ICES CM 2017/ SSGIEOM:31. 74pp.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf.

Evaluation of precision of length and other biological variables is based on methods described under STREAM MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies”.

(<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>) .

Editing and imputation methods: N

A manual has not been prepared yet.

The estimation of the length composition of the catches is made using the analytical methods described in the ICES Workshop on Sampling and Calculation Methodology for Fisheries Data – WKSCMFD. Age distribution is calculated using the estimated length frequency distribution of landings and the age-length keys (ALKs), based on analytical methods.

Cyprus awaits for the development of estimation routines for the RDBES on stock variables, which will be followed.

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

No.

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

Quality checks developed under MARE/2016/22 STREAM project Deliverable 6.1 are used before providing data to end-users.

AR comment:

There were no deviations.

SciObsOnShore*Commercial fishing trip*all species caught with PG_DEF

MS : CYP

Region: Mediterranean and Black Sea

Sampling scheme identifier: SciObsOnShore*Commercial fishing trip*all species caught with PG_DEF

Sampling scheme type: Commercial fishing trip

Observation type: SciObsOnShore

Time period of validity: from 2022 until 2024

Short description (max 100 words):

This sampling scheme aims the following:

- Collection of length samples from landings for all commercial species listed in Table 1 of the EU MAP Delegated Decision annex, caught with passive gears targeting demersal species in GSA25.
- Estimation of discards and PETS occurrence based on questionnaires
- Record fishing activity of vessels (effort variables not collected under Control Regulation due to absence of logbook) and assignment of landings to each gear
- Collection of samples for ageing, weight, sex and maturity for stocks selected (when allowed by fishermen / fishmongers)

Description of the population

Population targeted: All catches made by the Cyprus licensed vessels operating with passive gears targeting demersal species in GSA25. The primary sampling unit (PSU) is landing site.

Population sampled: The part of the target population that will be sampled concerns 15 landing sites. Sampling will be performed during weekdays and during the day (early morning until midday).

Possibility of performing sampling also during weekends and night is being evaluated. All landing sites are included in the sampling, except 1-2 sites that are used seasonally by 2-3 fishermen.

Stratification: No stratification is planned.

Sampling design and protocols

Sampling design description:

The target is to sample landing sites a minimum of 180 times during the whole year, which is an average of 4 landing sites (PSUs) per week (considering a minimum of 45 weeks per year). The sampling allocation is defined as follows:

All sampling sites are listed and are randomly ranked every two weeks. The list contains 12 landing sites, with combination of sites of very close proximity that may be sampled during the same day. The first 4 ranked landing sites are assigned to the first week, and the following 4 are assigned to the second week. A possible alternative landing site for each week is also selected based on the following 2 sites in the ranking, in the case it is not possible to perform the selected PSUs.

Following the selection of landings sites, a random sampling of the week days for each week is performed; at the moment the 5 week days are included in the random sampling; the first 4 ranked days are paired with the first 4 ranked landing sites, and the last day is paired with the alternative landing site.

During sampling, the aim is to sample all vessels encountered; in the case this is not possible due to simultaneous landing, a selection is made based on GFCM DCRF species priority list and species sample coverage; records of fishing activity are made on all vessels encountered, with indication whether length sampling was carried out, and for which species. During each sampled trip, individual fish per relevant species are randomly selected to be measured; in many cases due to low quantities all individuals are measured. If agreed by the owner / related fishmonger, individual fish of specific species are collected for biological variables (age, weight, sex and maturity), through length-stratified sub-sampling whenever possible.

Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed.

Regional coordination: The sampling design and protocol was not developed as part of a regional or multi-lateral agreement.

Link to sampling design documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (<https://www.fao.org/gfcm/data/dcrf>)

Link to sampling protocol documentation: The documentation is available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>

Compliance with international recommendations: Y (https://www.fao.org/gfcm/data/dcrf)
Sampling implementation
Recording of refusal rate: Y. Monitoring of sampling progress within the sampling year: For each PSU, records are made for all vessels encountered, as well as on all information collected by each vessel. In general, due to very good communication with fishermen, observers have access to the landings of all vessels encountered during sampling. PSUs with no fishing activity are also recorded. The selection of a possible alternative PSU allows the replacement of a selected PSU if needed (e.g. due to bad weather or technical problem). All modifications are electronically recorded and can be traced.
Data capture
Means of data capture: The means used for collecting the data include a scale, a flexible measuring tape, a calliper and a measuring board. Observers are also instructed to take photos, whenever considered useful, especially when PETS are encountered. Data are recorded in the relevant templates available for this sampling scheme. Data capture documentation: Data capture documentation is available at the following link: http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58?OpenDocument and http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/5C667104B416A5A0C22586C500320E18?OpenDocument Quality checks documentation: Y Quality checks on data capture are made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021. Reference: ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.
Data storage
National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data. International database: NA.

Relevant data are transmitted to GFCM and may become available at DCRF online platform (<https://www.fao.org/gfcm/data/dcrf/platform>), to DGMARE/JRC and also to ICES (WGBYC) concerning PETS.

Quality checks and data validation documentation: Y

MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>)

Sample storage

Storage description: Otoliths extracted from samples collected for biological variables are stored as whole in Eppendorf tubes, which are stored in the DFMR Headquarters in spaces used by the Data Collection Team. All otoliths collected are kept stored. Each year around 300 otoliths by relevant species of GSA25 are collected from commercial fisheries.

Sample analysis:

For age reading the following manual is consulted: Carbonara, P., Follesa, M.C., eds. 2019. Handbook on fish age determination: a Mediterranean experience. Studies and Reviews. No. 98. Rome, FAO. 2019. 192 pp. <https://www.fao.org/3/ca2745en/CA2745EN.pdf> . The relevant manual includes all demersal species for which otoliths are collected from GSA25 (*Boops boops*, *Mullus barbatus*, *M. surmuletus*, *Pagellus erythrinus* and *Spicara smaris*). For the two *Mullus* species, the report from ICES Workshop on Ageing Validation methodology (ICES.2017) is also considered.

Reference:

ICES.2017. Workshop on Ageing Validation methodology of *Mullus* species (WKVALMU), 15-19 May 2017, Conversano, Italy. ICES CM 2017/ SSGIEOM:31. 74pp.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKAACCU/wkaccu_2008.pdf.

Evaluation of precision of length and other biological variables is based on methods described under STREAM MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies”.

(<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>) .

Editing and imputation methods: N

A manual has not been prepared yet.

The estimation of the length composition of the catches is made using the analytical methods described in the ICES Workshop on Sampling and Calculation Methodology for Fisheries Data – WKSCMFD. Age distribution is calculated using the estimated length frequency distribution of landings and the age-length keys (ALKs), based on analytical methods.

Cyprus awaits for the development of estimation routines for the RDBES on stock variables, which will be followed.

Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?
No.

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

Quality checks developed under MARE/2016/22 STREAM project Deliverable 6.1 are used before providing data to end-users.

AR comment: There were no deviations.

SciObsAtSea*Commercial fishing trip*all species caught with PG_DEF

MS : CYP

Region: Mediterranean and Black Sea

Sampling scheme identifier: SciObsAtSea*Commercial fishing trip*all species caught with PG_DEF

Sampling scheme type: Commercial fishing trip

Observation type: SciObsAtSea

Time period of validity: 2023

Short description (max 100 words):

This sampling scheme aims the following:

- Collection of data on PETS occurrences in catches from passive gears targeting demersal species in GSA25
- Collection of length samples and discards from catches at-sea for all species listed in Table 1 of the EU MAP Delegated Decision annex, caught with passive gears targeting demersal species in GSA25.
- Record fishing activity of vessels (effort variables not collected under Control Regulation due to absence of logbook) and assignment of catches to the gear caught (when more than 1 gear is used at the same fishing trip)
- Collection of samples for ageing, weight, sex and maturity for selected stocks (when allowed by fishermen)

Description of the population

Population targeted: All catches made by the Cyprus licensed fishing vessels operating with passive gears targeting demersal species in GSA25. The primary sampling unit (PSU) is vessel.

Population sampled: The part of the target population that will be sampled concerns catches made by fishing vessels of at least 6m overall length. Vessels with length less than 6m are excluded; due to their limited space there will be difficulties for fishermen and observers to perform their work, and there will be safety risks during the fishing trip. Specifically, 296 vessels involved in this fishery will be included, while 28 vessels smaller than 6m and are excluded.

Stratification: An area stratification will be made, covering the 4 coastal districts of the island; Famagusta District on the eastern side, Larnaka District on the south-eastern, Limassol District south side and Paphos District on the western and north-western side. Sampling will be equally distributed to quarters. The reason for applying an area stratification is for allowing, as a first step, the evaluation of the bycatch of the different categories of PETS in the different Districts during each quarter using equal number of observations (in terms of fishing trips=fishing days). Based on the results, modifications may be applied in future on-board schemes for dedicated sampling effort in specific Districts and/or specific quarters for the different PETS categories.

Sampling design and protocols

Sampling design description:

The target is to sample 144 trips during the year, which account for 36 trips per quarter. Considering the area stratification, 9 trips per quarter are planned for each of the 4 coastal districts.

A list of vessels registered and/or being active in each of the four districts will be made at monthly level, for considering possible movements of vessels between districts. From each list, 3 vessels will be randomly selected. A date for each vessel within the month will be also randomly selected; the trip closest to the selected date will be sampled.

During sampling, catches from all fishing operations will be observed and sampled, considering that it is a common practice to use more than one gear during the same trip. All individuals of all species will be sampled, except in the case of large quantities (e.g. of bogue and picarel), for which individuals may be sampled randomly. If agreed by the owner, individual fish of specific species will be collected for biological variables (age, weight, sex and maturity), through length-stratified sub-sampling whenever possible.

Is the sampling design compliant with the 4S principle?: Yes, a Statistically Sound Sampling Scheme is followed.

Regional coordination: The sampling design and protocol is not developed as part of a regional or multi-lateral agreement.

Link to sampling design documentation: This sampling scheme is new, and the relevant documentation has not been prepared yet; relevant information is provided above.

Compliance with international recommendations: Y (<https://www.fao.org/gfcm/data/dcrf>)

Link to sampling protocol documentation: This sampling scheme is new, and the relevant documentation has not been prepared yet. The sampling form used for on-shore sampling of the fishery ([http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/5C667104B416A5A0C22586C500320E18/\\$file/Sma11%20scale%20sampling%20form.pdf](http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/5C667104B416A5A0C22586C500320E18/$file/Sma11%20scale%20sampling%20form.pdf)) will be modified accordingly.

Compliance with international recommendations: Y (<https://www.fao.org/gfcm/data/dcrf>)

Sampling implementation

Recording of refusal rate: Y.

Monitoring of sampling progress within the sampling year: Records on random selection at district and monthly level will be kept. In case the selected vessels are not available for sampling, they can be replaced by the following vessel in the ranking. All modifications will be electronically recorded and traced.
Data capture
Means of data capture: The means used for collecting the data include a scale, a flexible measuring tape, a calliper and a measuring board. Observers will be instructed to take photos whenever considered useful, especially in the case of PETS occurrence. Data will be recorded in the relevant templates that will be prepared for this sampling scheme. Data capture documentation: N. This sampling scheme is new, and the relevant documentation has not been prepared yet. The sampling form used for on-shore sampling of the fishery (http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/5C667104B416A5A0C22586C500320E18/\$file/Sma1l%20scale%20sampling%20form.pdf) will be modified accordingly. Quality checks documentation: Y Quality checks on data capture will be made based on potential sources of bias, which have been identified by consulting WKACCU Report (ICES. 2009), available in http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKA%20CCU/wkaccu_2008.pdf). A specific documentation describing the exact quality checks is expected to be available by end of 2021. Reference: ICES. 2009. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41 pp.
Data storage
National database: Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES); the previous database (SDAP) is no longer used for biological data. International database: NA. Relevant data are transmitted to GFCM and may become available at DCRF online platform (https://www.fao.org/gfcm/data/dcrf/platform), to DGMARE/JRC and also to ICES (WGBYC) concerning PETS. Quality checks and data validation documentation: Y MARE/2016/22 STREAM project Deliverable 6.1 Compilation and classification of quality checks at the national level (https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation)
Sample storage

Storage description: Otoliths extracted from samples collected for biological variables are stored as whole in Eppendorf tubes, which are stored in the DFMR Headquarters in spaces used by the Data Collection Team. All otoliths collected are kept stored. Each year around 300 otoliths by relevant species of GSA25 are collected from commercial fisheries.

Sample analysis:

For age reading the following manual is consulted: Carbonara, P., Follesa, M.C., eds. 2019. Handbook on fish age determination: a Mediterranean experience. Studies and Reviews. No. 98. Rome, FAO. 2019. 192 pp. <https://www.fao.org/3/ca2745en/CA2745EN.pdf> . The relevant manual includes all demersal species for which otoliths are collected from GSA25 (*Boops boops*, *Mullus barbatus*, *M. surmuletus*, *Pagellus erythrinus* and *Spicara smaris*). For the two *Mullus* species, the report from ICES Workshop on Ageing Validation methodology (ICES.2017) is also considered.

Reference:

ICES.2017. Workshop on Ageing Validation methodology of *Mullus* species (WKVALMU), 15-19 May 2017, Conversano, Italy. ICES CM 2017/ SSGIEOM:31. 74pp.

Data processing

Evaluation of data accuracy (bias and precision): Y

Evaluation of bias in data processing is made based on the scorecard for bias detection, developed under ICES WKACCU

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2008/WKACCU/wkaccu_2008.pdf.

Evaluation of precision of length and other biological variables is based on methods described under STREAM MARE/2016/22 STREAM project Deliverable 3.3 “Upgrade the methodological framework and tools for sampling optimization, implement and report case studies”.

(<https://datacollection.jrc.ec.europa.eu/mare-2016-22-strengthening-regional-cooperation>) .

Editing and imputation methods: Y (for PETS monitoring).

FAO. 2019. 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. Link: <https://www.fao.org/gfcm/publications/series/technical-paper/640/en/>

The estimation of the length composition of the catches is made using the analytical methods described in the ICES Workshop on Sampling and Calculation Methodology for Fisheries Data – WKSCMFD. Age distribution is calculated using the estimated length frequency distribution of landings and the age-length keys (ALKs), based on analytical methods.

Cyprus awaits for the development of estimation routines for the RDBES on stock variables, which will be followed.

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

No.

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

Quality checks developed under MARE/2016/22 STREAM project Deliverable 6.1 are used before providing data to end-users.

AR comment:

Sampling design: There was a high divergence among planned and achieved PSUs of this new sampling scheme. Reasons for the divergence was the fact that fishermen were reluctant to have observers on board, while sampling was also cancelled due to weather conditions. It was decided that the new sampling scheme for demersal fishery with passive gears will be performed also during 2024, for sampling the planned number of trips. During the second year of implementation, observers on board are the same personnel involved in the sampling of this fishery at landing sites, therefore there is a good communication among observers and fishermen, and fishermen are less reluctant to accept observers on board.

There were no further deviations.

MEDITS_Research survey at sea

MS : CYP

Region: Mediterranean and Black Sea

Sampling scheme identifier: MEDITS

Sampling scheme type: Research survey at sea

Observation type: SciObsAtSea

Time period of validity: from 2022 until 2024

Short description (max 100 words):

The main objectives of the survey are:

- To create time series of standardized abundance and biomass indices of demersal species in the Mediterranean Sea, allowing the identification of spatiotemporal variations in their abundance and distribution
- To collect biological data from a reference list of 82 target species (including 32 elasmobranchs) assigned in two groups, allowing the estimation of population structure and biological parameters.

Sampling activities covered by the survey are listed in Table 2.6. It is noted that from 2022 an additional sampling activity is introduced, which concerns stomach sampling for *Merluccius merluccius*.

Description of the population

Population targeted:

There is a reference list of 82 target species (including 32 elasmobranchs) assigned in two groups. MEDITS G1 includes 41 species with 9 demersal (3 fish, 4 crustaceans and 2 cephalopods) and 32 Selachians. MEDITS G2 includes 42 species. The list of reference species is available in the instruction manual of Medits in pages 46-49 (version 9, 2017), available at:

http://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

The main survey area includes the following GSAs: GSA 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 15, 16, 17, 18,19, 20, 22, 23, 25.

Population sampled:

Medits is a multispecies survey, targeting demersal species.

Stratification:

A stratification of sampling hauls is made on the following depth strata:

Depth zone (m)

10-50

50-100

100-200

200-500

500-800

Sampling design and protocols

Sampling design description:

The common methodology for the survey is defined in the instruction manual of Medits (version 9, 2017), available at:

http://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

Cyprus performs 26 sampling hauls in GSA25, distributed in the different depth zones as presented in Table 2.6.1 of Text Box 2.6. Figure 2.6.1 in Text Box 2.6 provides the distribution of sampling hauls in GSA25.

Is the sampling design compliant with the 4S principle?: NA (Random Stratified Survey)

Regional coordination: Yes. The participating countries in the Medits survey (including non-EU Member States) are the following: Spain, France, Italy, Malta, Slovenia, Croatia, Greece, Cyprus, Montenegro, Albania.

Link to sampling design documentation:

http://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

Compliance with international recommendations: Y

Link to sampling protocol documentation:

http://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

Compliance with international recommendations: Y

Sampling implementation

Recording of refusal rate: NA.

Monitoring of sampling progress within the sampling year:

The Medits survey has been assigned for the period 2021-2023 through a tender's procedure. There is a condition in the relevant assigned tender that the survey is carried out in the period required by the instruction manual. Effort is made when a new tender is to be assigned, that the tender's procedure is finalised on time, allowing the required period of performing the survey to be respected.

Data capture

Means of data capture:

The means used for collecting biological data include scales, flexible measuring tapes, and measuring boards. Data are recorded in the relevant templates prepared for this sampling scheme.

Data capture documentation:

http://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

Quality checks documentation: Y

Although several tools exist within different groups, MEDITS Coordination Committed has agreed to accept as officially recognised data quality tool the R package RoME. RoME is an R code that perform multiple checks on MEDITS Survey data (TA, TB, TC, TD, TT and TE files). Apart from data format checks RoME checks for implementation inconsistencies based on MEDITS protocol. The details of the checks performed are available at:

https://www.sibm.it/MEDITS%202011/new/RoME_April_2019/RoME%201.4%20User%20Manual%20-%202019.pdf

Data storage**National database:**

Following the RoME check data are imported to TruST 1.0 (Trawl Survey Database System) developed by Kosmosambiente firm in Italy. TruST performs few additional checks and upon completion data are imported.

International database: NA

Quality checks and data validation documentation: Y

https://www.sibm.it/MEDITS%202011/new/RoME_April_2019/RoME%201.4%20User%20Manual%20-%202019.pdf

Sample storage

Storage description:

Otoliths extracted from individuals of three species (*Merluccius merluccius*, *Mullus barbatus*, *M. surmuletus*) are stored as whole in Eppendorf tubes, which are stored in the DFMR Headquarters in spaces used by the Data Collection Team. All otoliths collected are kept stored. An average of 450 otoliths are collected each year (around 100 from *M. merluccius*, 340 from *Mullus barbatus*, 10 from *M. surmuletus*).

From 2022 onwards, stomachs will be collected from *Merluccius merluccius* and will be stored in the DFMR Headquarters, in freezers used only by the Data Collection Team. Based on the stomach sampling protocol that will be followed, 3 length categories, with 20 full stomachs for each of them (i.e. 60 full stomachs) should be collected. The average number of this species caught during Medits survey in GSA25 for the period 2018-2020 is 100; at the moment there cannot be an estimation on the % of individuals expected to have full stomach and will be stored for analysis.

Sample analysis:

For age reading the following manual is consulted: Carbonara, P., Follesa, M.C., eds. 2019. Handbook on fish age determination: a Mediterranean experience. Studies and Reviews. No. 98. Rome, FAO.

2019. 192 pp. <https://www.fao.org/3/ca2745en/CA2745EN.pdf>. The relevant manual includes the 3 demersal species for which otoliths are collected from the Medits survey. For the two *Mullus* species, the report from ICES Workshop on Ageing Validation methodology (ICES.2017) is also considered.

For stomach analysis, the STREAM Deliverable D. 4.1 - Updated protocols and guidelines for collection, processing and analysis of stomach contents will be followed, available at <http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/A22B9A733AB6CF3242258330002187A3?OpenDocument>.

Reference:

ICES.2017. Workshop on Ageing Validation methodology of Mullus species (WKVALMU), 15-19 May 2017, Conversano, Italy. ICES CM 2017/ SSGIEOM:31. 74pp.

Data processing

Evaluation of data accuracy (bias and precision): Y

RoME routine checks for some of these qualities. Additionally further processes are facilitated using TruST evaluation procedures.

Editing and imputation methods: Y

Once data are imported into TruST all edits on the original dataset require verified access. TruST incorporates internal graphical and plotting capabilities to support visual and holographic data checks too. Internal imputation capabilities are also included in TruST to calculate Indexes at any various stratification levels.

In all stages, calculations performed are in line with the recommended procedures of MEDITS Handbook v9, 2017.

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

Calculations performed are in line with the recommended procedures of MEDITS Handbook v9, 2017.

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

Based on the RoME and TruST routines. Additionally, data format and performance checks occur during the uploading facility of some end-users (e.g JRC).

AR comment: There were no deviations.

SelfAtSea recreational (off site surveys)

MS: CYP

Region: Mediterranean and Black Sea

Sampling scheme identifier: SelfAtSea recreational (off site surveys)
Sampling scheme type: recreational (off site surveys)
Observation type: SelfAtSea
Time period of validity: 2022-2024
This sampling scheme aims at collecting annually recreational data in terms of effort and catch per species (landings and releases) from recreational fishers with an annual fishing license (boat fishing and spearfishing), and also from recreational fishers from shore who are not required to own a fishing licence. It involves the use of a logbook scheme through a mobile application (Cy-FIS*). The scheme aims also to provide at biennial level an estimation on the number of recreational fishers not required to own a fishing license, as well as data on their effort and catches, through recall surveys. * Cy-FIS is a free mobile application for Android and iOS devices that offers the ability to DFMR to electronically record fishing and other related activities. It was developed for DFMR by Quality & Reliability S.A. and co-financed by EMFF 2014-2020 - Measure 3.1 - Control and Enforcement of the Operational Program (OP) "Thalassa 2014-2020".
Description of the population
Population targeted: The targeted population is all recreational fishermen in Cyprus. Population sampled: All the part of the targeted population is included in the sampling. Stratification: For the recall survey, a random, multistage, stratified sampling strategy will be followed. Telephone numbers will be randomly selected in a way that postal areas and area types within (urban or rural) are proportionally represented in the sample according to their population size (based on the most recent population census), so that households in each area have equal selection possibility and no household is called more than once.
Sampling design and protocols
Sampling design description: MRF data in Cyprus will be systematically collected using a logbook scheme through the mobile application Cy-FIS, that will be mandatory for all recreational fishers with an annual fishing licence (boat fishing and spearfishing) and optional for recreational fishers from shore that are not required to own a fishing licence. Consequently, all fishing trips of all licenced fishers will be recorded in terms of effort, catch per species (landings and releases), and biological parameters like individual length and/or weight where needed. However, as logbooks will be optional for recreational fishers from shore and thus the data collected are expected to be incomplete, nationwide probability-based telephone one-year recall surveys will also be conducted in order to fully cover this activity. These surveys will be conducted every two years, starting from 2023 and will aim to estimate the number of shore fishers and collect data on spatial and temporal distribution of effort, catch per species and method used, etc. Landline and cell phone numbers will be randomly selected from the national telephone directory, and to cover households not included there, a fraction of the sample will come from random cell phone number generation. A random, multistage, stratified sampling strategy will be followed. Numbers will be randomly selected in

a way that postal areas and area types within (urban or rural) are proportionally represented in the sample according to their population size (based on the most recent population census), so that households in each area have equal selection possibility and no household is called more than once. The sample size will be adjusted to achieve a relative precision of at least 0.05 and confidence level of 0.95. Demographic data will be collected and participants will be asked if they (or other people in the household and how many) generally fish in the sea from shore and if they do, to recall their own shore fishing effort and catches by species for the whole previous year.

The selected approach of off-site surveys (logbooks and recall surveys) is preferred over on-site surveys, as a wide range of activities scattered in space and time has to be covered. It is possible that this approach could introduce declaration or recall bias, as well as effort and harvest overestimation, it can however achieve much better population coverage regardless of the high diversity of fishing practices among fishers, and thus provide good overall annual estimates. On-site surveys would be much costlier, the sample size would be much smaller (and thus uncertainty would be higher), and would greatly suffer from representativeness bias.

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

Regional coordination: The sampling design and protocols follow the RCG Med&BS 2021 recommendation to implement MRF data collection by following methodologies described in the “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.” (Grati et al. 2021).

Reference

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

Link to sampling design documentation:

The “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.” (Grati et al. 2021) is available at <https://www.fao.org/gfcm/publications/series/technical-paper/669/en/> .

Compliance with international recommendations: Y.

Link to sampling protocol documentation:

The “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.” (Grati et al. 2021) is available at <https://www.fao.org/gfcm/publications/series/technical-paper/669/en/> .

Sampling implementation

Recording of refusal rate: Y.

Monitoring of sampling progress within the sampling year: The use of Cy-FIS will be mandatory for all licensed fishermen, and optional for fishermen not required to own a license. Considering that the optional data collected are expected to be incomplete, the biennial recall survey on the activity of non-licensed recreational fishermen will be carried out in order to fully cover this activity.

Data capture

Means of data capture: The Cy-FIS free mobile application will be used for recording data at trip level with the use of a logbook scheme, as well as the telephone recall survey. Cameras may also be used for providing photos. Data capture documentation: Y. “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.”, available at https://www.fao.org/gfcm/publications/series/technical-paper/669/en/. Quality checks documentation: Y. “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.”, available at https://www.fao.org/gfcm/publications/series/technical-paper/669/en/.
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. 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. Quality checks and data validation documentation: Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.
Sample storage
Storage description: No sample storage is foreseen. Sample analysis: No sample analysis is foreseen.
Data processing
Evaluation of data accuracy (bias and precision): Y. “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.”, available at https://www.fao.org/gfcm/publications/series/technical-paper/669/en/ Editing and imputation methods: Y. “Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea.”, available at https://www.fao.org/gfcm/publications/series/technical-paper/669/en/ Quality document associated to a dataset: Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed? N.

Validation of the final dataset:

For data quality checks before the data are provided to end users, the Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea, as well as relevant reports **from the ICES** Working Group on Recreational Fisheries Surveys will be consulted.

AR comment: 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.

Socio-economic data on 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.</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): Socio-economic data on fisheries
Sampling scheme: Census
Variables: Days at sea (all segments-control regulation), Energy consumption (DTS2440, PGP1218), Energy costs (DTS2440, PGP1218), Full-time equivalent (FTE) (DTS2440, PGP1218) , Gross debt (DTS2440, PGP1218) , Gross value of landings (all segments-control regulation), Investments in tangible assets (net purchase of assets) (DTS2440, PGP1218), Mean age of vessels (all segments-FVR-national statistics), Mean LOA of vessels (all segments-FVR-national statistics), Number of vessels (all segments-FVR-national statistics), Other income (DTS2440, PGP1218), Other non-variable costs (DTS2440, PGP1218), Other variable costs (DTS2440, PGP1218), Paid labour (DTS2440, PGP1218), Personnel costs (DTS2440, PGP1218), Repair and maintenance costs (DTS2440, PGP1218), Total value of assets (DTS2440, PGP1218 for value of assets information), Total vessel power (all segments-FVR-national statistics), Total vessel tonnage (all segments-FVR-national statistics), Unpaid labour (DTS2440, PGP1218), Employment by age (DTS2440, PGP1218), Employment by employment status (DTS2440, PGP1218), Employment by gender (DTS2440, PGP1218), Employment by level of education (DTS2440, PGP1218), Employment by nationality (DTS2440, PGP1218), FTEs by gender (DTS2440, PGP1218), Unpaid labour by gender (DTS2440, PGP1218). Note: In parenthesis it is indicated for which fleet segments the sampling scheme census is concerned. For the variables: days at sea and gross value of landings the information is collected based on the Control

regulation and that it concerns all fleet segments and no survey planning is needed. The same stands for the variables whose information is collected according to the FVR (national statistics).
Supra region(s): Mediterranean Sea and Black Sea
Survey planning
Provide a short description of the population the sampling scheme applies to; e.g. <i>‘less active vessels using passive gears’</i>. Two main fishing technique categories are used for Census, which are: vessels using polyvalent passive gears only over 12m (PGP) and demersal trawlers (DTS). Our fleet includes 32 polyvalent vessels using passive gears over 12 m (PGP) in 12-<18m length class, 4 vessels in 18-<24m length class and 1 vessel in 24-<40m length class. Because of the small population of the two length groups and for sampling purposes and confidentiality reasons, all polyvalent vessels using passive gears over 12 m (PGP) are included in a single category, 12-<18m (clustering is explained in Text Box 5.2). Therefore, PGP consists of 37 vessels. Due to the very small number of demersal trawlers (DTS) below 24m (2 vessels) they could be regrouped in the 24-<40m length group (4 vessels), since they are similar and to ensure the consistency of data from previous years. Since, all lengths of demersal trawlers have been grouped, their total population consists of 6 vessels.
Survey design and strategy
List data sources; e.g. interviews, registers, log books, sales notes, VMS, financial accounts etc. Data sources that will be used are: Logbooks, Sales notes, Questionnaires, National Statistics such as the Fleet Vessel Register. Describe how the sample sizes were determined. Census will be performed, therefore there is no sample. Describe survey methods and distribution; e.g. questionnaire forms by post, by email, on website, by phone etc. access to other datasets etc. The most important tool that will be used is the post/face-to face interviews based on predetermined questionnaires. Describe the role of auxiliary information, if any, in the strategy: e.g. for validation, cross referencing, fall back data source etc. There is not any auxiliary information.
Estimation design

Describe method of calculating population estimate from sample.

Census will be performed, therefore there is no sample.

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

Imputed values are described in Indirect Scheme.

Describe treatment of nonresponse.

In the case of trawlers, purse seiners and polyvalent passive gears vessels over 12m, where a census will be performed, non-responsive units may exist. The method used to raise the final estimates to total population is the adjustments of raising factors, where the factors is the total number of licensed active vessels.

Error checks**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.**

So far any validations and identification of errors are taken place manually. Specifically, typing errors can occur while data are being recorded, coded, edited or imputed. Sometimes, errors are incorrectly identified during the data analysis phase. Certainly, the interviewees may also provide incorrect answers to avoid reporting confidential data (because of concerns about taxes, legal issues or even competition). Even when errors are discovered, they can be wrongly corrected because of poor imputation procedures. Usually, interviewers can be asked again some questions that we think is wrong as an opportunity to double check the reporting.

In the case of Partial Non-Response (PNR) where missing values identified in the control procedure, are treated by imputation and specifically the “mean of the group”, in line with the FAO “Handbook for fisheries socio-economic sample survey” <https://www.fao.org/3/i6970e/i6970e.pdf>. and handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study).

Moreover, measurement and processing errors are located through unreasonable and extreme values of the data. An unreasonable value is a value that has no natural meaning of interpretation of the variable (e.g. a negative value of a variable that can only take positive values). An extreme value is a value that is considerably remote, compared to the majority of the rest of the variable values. In order to address the problems related to the unreasonable or extreme values that appear on some vessels in basic technical and economic parameters that are used for the estimation of the data call variables, we use “mean of the group”, in line with the FAO “Handbook for fisheries socio-economic sample survey” <https://www.fao.org/3/i6970e/i6970e.pdf>. and handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study).

Data storage and documentation

Describe how the data is stored.

A national database exists, but there are plans for developing a new one, since the current one is useful only for storing data, with many limitations. A study is ongoing, with duration of around two years, aiming the formation of the DFMR's strategy on all information systems used/required by the DFMR; under this study all current information systems and procedures for collecting, processing and disseminating data by the DFMR are being reviewed by experts, who will propose best ways for fulfilling EU and national requirements related to all its activities.

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

The methodologies are not documented yet. It is planned to be available by the end of 2021.

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

The methodology adopted and described above is controlled for its proper implementation at all stages. In particular, during the sampling period, we communicate with the correspondents at regular time intervals in order to ascertain the proper process of collecting the questionnaires. When the questionnaires are collected, the material is evaluated; for example, the number of questionnaires collected per correspondent and the completeness of the data is checked.

Confidentiality**Are procedures for confidential data handling in place and documented?**

Yes. Only authorized people can have the exclusive right of access to that information. In addition, DFMR's employees are bounded by confidentiality and have the obligation to use the data accessed exclusively for statistical purposes. Any other use of such data is prohibited beyond the end of their duties.

For all data collected by the DFMR that are related to natural persons, rules set by the General Data Protection Regulation (Reg. (EU) 2016/679) are respected and followed. A document stating how the DFMR treats personal data, complying with the GDPR, is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/page09_gr/pag09_gr?OpenDocument (in Greek).

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

We do not have other partners in collecting socioeconomics data besides the DFMR employees.

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

Yes. We do not give raw data to external end-users. The data are provided in such aggregated format that no one can identify the individual statistical units (fishing vessels) or their owner or to whom these data

belong to. Furthermore, a password is needed in order to have access in the database, which only authorized people can have it.

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

No except in the case of the Purse seiner targeting BFT fleet segment since only one vessel belongs to this segment.

AR comment: There were no deviations from the work plan. Census was the methodology used. It is noted though that the response rates for the trawlers segment 24-<40m length group was 100% whereas the ones of the polyvalent vessels using passive gears over 12 m (PGP) in 12-<18m length class was 97%. The methodologies are documented and they are already available on the website at the following link.

[http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58/\\$file/Metho dology%20Report%20-%20DCF%202021%20V1.pdf](http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58/$file/Metho dology%20Report%20-%20DCF%202021%20V1.pdf)

Socio-economic data on fisheries_Probability Sample Survey

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. 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): Socio-economic data on fisheries
Sampling scheme: Probability Sample Survey
Variables: Energy consumption, Energy costs, Gross debt, Investments in tangible assets (net purchase of assets), Other income, Other non-variable costs, Other variable costs, Personnel costs, Repair and maintenance costs, Total value of assets, Employment by level of education.
Supra region(s): Mediterranean Sea and Black Sea
Survey planning
Provide a short description of the population the sampling scheme applies to; e.g. 'less active vessels using passive gears'.

Two main fishing technique categories are used for random sampling, which are: vessels using passive gears only for vessels <12m (PG) and a new category, which represents the segments Polyvalent "passive gears only" (category C licences) (PGO). The fishing activity of vessels using polyvalent passive gears only (category C licences) is performed on a periodic basis since they are allowed to fish only a total of approximately 100 days each year, under a 2007 national legislation. This category cannot be integrated with the existing segments of Vessels using Polyvalent passive gears only' below 12m since the data of previous years would not be comparative and we would face problems of bias.

Polyvalent "passive gears only" (category C licences) (PGO) has a total population of 417 vessels. In 0-<6m length group (PGO0006) there are 344 vessels, and 6-<12m length group (PGO0612) includes 73 vessels. Vessels using passive gears only <12m (PG) are divided into two subcategories as follows: vessels using passive gears only 0-<6m (PG0006) which includes 28 vessels and vessels using passive gears only 6-<12m (PG0612) with 298 vessels.

Survey design and strategy

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

Data sources that will be used are: Questionnaires

Describe how the sample sizes were determined.

We will apply a "disproportionate allocation" sampling scheme (Sapsford and Jupp, 2006). This is also in line with the FAO "Handbook for fisheries socio-economic sample survey" <https://www.fao.org/3/i6970e/i6970e.pdf>. This strategy allows for keeping the sample as large as possible in order to have a higher coverage rate for the smaller-sized segments, while trying to minimize as much as possible the variance of each stratum. In other words, the size of the sample in each stratum is inversely proportional to the stratum's population size, as follows below:

Number of vessels in stratum	Sample rate
<50	50%
50 - 500	25%
500 - 2000	10%
>2000	5%

Following the previous table the sample size of our segments will be:

Segments	Sample size (population*sample rate)
PG0006	14
PG0612	75
PGO0006	86
PGO0612	19

After the sample size for every stratum has been determined, the sample units can be chosen using random sampling without replacement and with equal probabilities. Each unit of the population has the same probability to be part of the sample and this is:

$P_i = 1/N_i$ where, N_i = the total population of the segment i

Randomness can be achieved by assigning a random number to every fishing vessel belonging to the population, using “RAND” function in excel. After that, sorting the list of vessels of a specific segment by their random number will take place. Therefore, according to the sample size (n_i), that determined before, the first n_i vessels of the list will be in the sample.

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

The most important tool that will be used is the post/face-to face interviews based on predetermined questionnaires.

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.

Estimation design

Describe method of calculating population estimate from sample.

The method used to raise the final estimates to total population is the adjustments of raising factors, where the factors is the total number of licensed active vessels, vessels fishing at least for one day.

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

Imputed values are described in Indirect Scheme.

Describe treatment of nonresponse.

Existence of non-responsive units it could affect the response rate. In order to maintain the response rate we will use replacement units. More specifically, the “substitute” vessels can be pulled from the subsequent next-in-sequence list of vessels identified in the random sampling procedure explained in the section of Survey design and strategy under determination of sample size. This treatment is in line with the FAO “Handbook for fisheries socio-economic sample survey”

<https://www.fao.org/3/i6970e/i6970e.pdf>.

Error checks

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.

So far, any validations and identification of errors are taken place manually. Specifically, typing errors can occur while data are being recorded, coded, edited or imputed. Sometimes, errors are incorrectly identified during the data analysis phase. Certainly, the interviewees may also provide incorrect answers to avoid reporting confidential data (because of concerns about taxes, legal issues or even competition). Even when errors are discovered, they can be wrongly corrected because of poor imputation procedures. Usually, interviewers can be asked again some questions that we think is wrong as an opportunity to double check the reporting.

In the case of Partial Non-Response (PNR) where missing values identified in the control procedure, are treated by imputation and specifically the “mean of the group”, in line with the FAO “Handbook for fisheries socio-economic sample survey” <https://www.fao.org/3/i6970e/i6970e.pdf>. and handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study).

Moreover, measurement and processing errors are located through unreasonable and extreme values of the data. An unreasonable value is a value that has no natural meaning of interpretation of the variable (e.g. a negative value of a variable that can only take positive values). An extreme value is a value that is considerably remote, compared to the majority of the rest of the variable values. In order to address the problems related to the unreasonable or extreme values that appear on some vessels in basic technical and economic parameters that are used for the estimation of the data call variables, we use “mean of the group”, in line with the FAO “Handbook for fisheries socio-economic sample survey” <https://www.fao.org/3/i6970e/i6970e.pdf>. and handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study).

Data storage and documentation

Describe how the data is stored.

A national database exists, but there are plans for developing a new one, since the current one is useful only for storing data, with many limitations. A study is ongoing, with duration of around two years, aiming the formation of the DFMR’s strategy on all information systems used/required by the DFMR; under this study all current information systems and procedures for collecting, processing and disseminating data by the DFMR are being reviewed by experts, who will propose best ways for fulfilling EU and national requirements related to all its activities.

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

The methodologies are not documented yet. It is planned to be available by the end of 2021.

Revision

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

The methodology adopted and described above is controlled for its proper implementation at all stages. In particular, during the sampling period, we communicate with the correspondents at regular time intervals in order to ascertain the proper process of collecting the questionnaires. When the questionnaires are collected, the material is evaluated; for example, the number of questionnaires collected per correspondent and the completeness of the data is checked. The coverage rate of the proposed sample is compared with the response rate of sample units per fleet segment.

Confidentiality

Are procedures for confidential data handling in place and documented?

Yes. Only authorized people can have the exclusive right of access to that information. In addition, DFMR's employees are bounded by confidentiality and have the obligation to use the data accessed exclusively for statistical purposes. Any other use of such data is prohibited beyond the end of their duties.

For all data collected by the DFMR that are related to natural persons, rules set by the General Data Protection Regulation (Reg. (EU) 2016/679) are respected and followed. A document stating how the DFMR treats personal data, complying with the GDPR, is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/page09_gr/pag09_gr?OpenDocument (in Greek).

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

We do not have other partners in collecting socioeconomics data besides the DFMR employees.

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

Yes. We do not give raw data to external end-users. The data are provided in such aggregated format that no one can identify the individual statistical units (fishing vessels) or their owner or to whom these data belong to. Furthermore, a password is needed in order to have access in the database, which only authorized people can have it.

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

No except in the case of the Purse seiner targeting BFT fleet segment since only one vessel belongs to this segment.

AR comment:

The achieved sample rates for 2022 were much more than the planned sample rates determined in the Work Plan for all the fleet segments. The planned sample rates in the WP were 25% for all the fleet segments except for the segment: Vessels using Polyvalent "passive" gears only 0-< 6 m (PG0006) which was 50%.

The achieved sample rates of our fleet segments for 2022 are shown on the Table below:

Segments	Achieved sample rate %
PG0006	67
PG0612	71
PGO0006	30
PGO0612	29

The methodologies are documented and they are already available on the website at the following link.

[http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58/\\$file/Methodology%20Report%20-%20DCF%202021%20V1.pdf](http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58/$file/Methodology%20Report%20-%20DCF%202021%20V1.pdf)

Socio-economic data on fisheries_ Indirect Survey

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. 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): Socio-economic data on fisheries
Sampling scheme: Indirect Survey
Variables: Consumption of fixed capital (all segments plus Inactive), Number of fishing enterprises/units, Operating subsidies, Subsidies on investments, Total value of assets, Value of physical capital (all segments plus Inactive), Value of unpaid labour, Full-time equivalent (FTE) (PG0006, PG0612, PGO0006, PGO0612), Paid labour (PG0006, PG0612, PGO0006, PGO0612), Unpaid labour (PG0006, PG0612, PGO0006, PGO0612), Employment by age (PG0006, PG0612, PGO0006, PGO0612), Employment by employment status (PG0006, PG0612, PGO0006, PGO0612), Employment by gender (PG0006, PG0612, PGO0006, PGO0612), Employment by nationality (PG0006, PG0612, PGO0006, PGO0612), FTEs by gender (PG0006, PG0612, PGO0006, PGO0612), Unpaid labour by gender (PG0006, PG0612, PGO0006, PGO0612).
Supra region(s): Mediterranean Sea and Black Sea
Survey planning
Provide a short description of the population the sampling scheme applies to; e.g. 'less active vessels using passive gears'. Indirect survey for the whole population for the above-mentioned variables will be performed.
Survey design and strategy

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

Data sources that will be used are: administrative sources - estimation using PIM method, information from Licence system, DFMR's records and estimation, EU-Fisheries Fund.

Describe how the sample sizes were determined.

Indirect survey will be performed, therefore there is no sample.

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

Indirect survey will be performed using the mentioned data sources.

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

There is not any auxiliary information.

Estimation design

Describe method of calculating population estimate from sample.

Indirect survey will be performed, therefore there is no sample.

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

- The variables: Consumption of fixed capital, Total value of assets (for the assets part) and Value of physical capital for all the fleet segments including the inactive ones for Consumption of fixed capital and Value of physical capital are estimated using the PIM method in accordance with the RCG ECON (PG ECON) recommendations.
- The variable Number of fishing enterprises/units is estimated using information that the owners of the vessels are provided when they applied for the licence.
- The variables: Operating subsidies and Subsidies on investments are collected from DFMR's records because DFMR is the responsible authority for the implementation of state aid in fishery sector and also of the European Fisheries Fund 2021-2027.
- For the variable value of unpaid labour the FTE method (WS, Naples, 2009) will be applied where the average wage by fleet segment is used.
- Full-time equivalent (FTE) variable in Indirect Collection Scheme is applicable only for Polyvalent "passive gears only" (category C licences) 0-<6m (PGO0006), Polyvalent "passive gears only" (category C licences) 6-<12m (PGO0612), vessels using passive gears only 0-<6m (PGO006) vessels using passive gears only 6-<12m (PGO612). This variable is estimated using administrative sources. In particular, it is estimated based on the time these fleet segments are used to perform their main fishing activities using a variety of fishing gears (nets, pots, longlines etc.).
- Paid labour variable is also applicable only for PG0006, PG0612, PGO0006 and PGO0612 vessels, based on our Licence system. The fishermen of these fleet segments are individuals

who need to satisfy certain criteria according to the national legislation before getting the licence. The fishermen need to make an application and as a result, a lot of information is gathered at the state of evaluating each application. The variables unpaid labour and unpaid labour by age are also collected from DFMR's licence system. The collection of the social data started in 2018 for the 2017 data. The collection of the social data are on a triennial data collection and thus the next one will be in 2021 for the 2020 data and in 2024 for the 2023 data. We follow the relevant guidelines of the PGECON 2017 and the PGECON Workshop on Social and new economics variables (Athens 2018). The variables: Employment by age, Employment by employment status, Employment by gender, Employment by nationality, FTEs by gender and Unpaid labour by gender as in the case of paid labour are collected from DFMR's records based on its licence system for PG0006, PG0612, PGO0006 and PGO0612 fleet segments. Describe treatment of nonresponse. Indirect survey will be performed, therefore there aren't any non-responsive units.
Error checks
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. Indirect survey will be performed for the above-mentioned variables; therefore, errors are not expecting.
Data storage and documentation
Describe how the data is stored. A national database exists, but there are plans for developing a new one, since the current one is useful only for storing data, with many limitations. A study is ongoing, with duration of around two years, aiming the formation of the DFMR's strategy on all information systems used/required by the DFMR; under this study all current information systems and procedures for collecting, processing and disseminating data by the DFMR are being reviewed by experts, who will propose best ways for fulfilling EU and national requirements related to all its activities. Provide link to webpage where additional methodological documentation can be found, if any. The methodologies are not documented yet. It is planned to be available by the end of 2021.
Revision
Describe the frequency of the methodology review e.g., revision of; segmentation, survey method per segment, per variable etc. The methodology adopted and described above is controlled for its proper implementation at all stages. In particular, each year the survey used for each variable is revised based on RCG ECON recommendations like in the case the PIM method and the relevant FAO or other handbooks.
Confidentiality

Are procedures for confidential data handling in place and documented?

Yes. Only authorized people can have the exclusive right of access to that information. In addition, DFMR's employees are bounded by confidentiality and have the obligation to use the data accessed exclusively for statistical purposes. Any other use of such data is prohibited beyond the end of their duties.

For all data collected by the DFMR that are related to natural persons, rules set by the General Data Protection Regulation (Reg. (EU) 2016/679) are respected and followed. A document stating how the DFMR treats personal data, complying with the GDPR, is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/page09_gr/pag09_gr?OpenDocument (in Greek).

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

We do not have other partners in collecting socioeconomics data besides the DFMR employees.

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

Yes. We do not give raw data to external end-users. The data are provided in such aggregated format that no one can identify the individual statistical units (fishing vessels) or their owner or to whom these data belong to. Furthermore, a password is needed in order to have access in the database, which only authorized people can have it.

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

No except in the case of the Purse seiner targeting BFT fleet segment since only one vessel belongs to this segment.

AR comment: There were no deviations from the work plan. It is reminded that the collection of social data is on a triennial basis. The methodologies are documented and they are already available on the website at the following link.

[http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58/\\$file/Met
hodology%20Report%20-%20DCF%202021%20V1.pdf](http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/6DC46542CDE2BC644225833000214B58/$file/Met%20hodology%20Report%20-%20DCF%202021%20V1.pdf).

Complementary data collection of fishing activity_random sampling

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. 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): Complementary data collection of fishing activity
Sampling scheme: random sampling
Variables: Fishing activity variables (Table 6 of EU MAP Delegated Decision annex) to be reported at <u>metier</u> and segment level (Days at sea, Fishing days, GT * Days at sea, GT * Fishing days, Number of trips, Number of fishing operations, Number of nets(m) * soak time (days), Number of nets / Length, Number of hooks, Number of lines, Numbers of pots, traps Live Weight of landings total and per species
Supra region(s): Mediterranean Sea and Black Sea
Survey planning
Complementary data collection of fishing activity applies to active vessels using passive gears with length 0-< 6 m and 6-< 12 m. Based on Chapter II point 3.1 of the EU MAP Delegated Decision annex, data on fishing activity shall cover variables indicated in Table 6 at the lowest relevant geographic level by fleet segment and <u>metier level 6</u>. Complementary data collection is required for vessels with length 0-6m and 6-12m for the following reasons: - The use of logbooks, which provide information on effort variables, is not required for fishing vessels less than 10 metres length. - For fishing vessels <10m, sales notes and sales receipts are considered as a proxy for fishing days, days-at-sea, fishing trips and fishing operations; however, these effort variables cannot be assigned to metiers. Furthermore, sales notes and sales receipts cannot be related with certain effort variables (e.g. length of nets, number of hooks, soaking time). - Although all fishing vessels in Cyprus are required to record their landings irrespectively of quantities caught (through logbooks, sales notes and sales receipts), in the absence of logbooks the landings of vessels<10m cannot be assigned to metiers.
Survey design and strategy

Data sources from Control Regulation used for data collection on fishing activity include logbooks, sales notes, sales receipts for fishermen who are not required to use sales notes, and Fleet Vessel Register.

Complementary data on effort and landings by métier will be collected through a probability sample survey. The PSU will be the landing site on a given day, which will be selected randomly four times per week. SSU will be the cluster of trips within the PSU, aiming to sample all vessels that land from morning until midday, which is the landing time for most of fishermen. For each sampled trip, data on métiers and quantities of gears used will be recorded, as well as all quantities of species, assigned to each métier. This probability sample survey will take place as part of the biological sampling; this information is collected in parallel with biological sampling by DFMR since the introduction of “métier” in data collection.

Estimation design

For complementary data collection on landings, the aim is to estimate the percentage of landings of each species assigned to each métier. The percentage will be then raised to the total landings (which derive from data collected under Control Regulation), allowing the estimation of landings by species by métier.

For complementary data collection on effort, the aim is to estimate the % of fishing days, days-at-sea, fishing trips and fishing operations assigned to each métier. In case during a fishing day more than one métier is exercised, one fishing day/day-at-sea/ fishing trip/fishing operation will be assigned to each of the métiers exercised by the vessel. The percentage will then be raised to the total number of fishing days/ days-at-sea/ fishing trips/fishing operations (which is estimated from number of sales notes and sales receipts collected under Control Regulation), allowing the estimation of these effort variables by métiers. Based on data collected on length of nets, number of hooks, number of pots and soaking time, an average value of these variables will be estimated by métier, and will be raised to the total number of fishing trips/days by métier.

In general, there is a very good communication between the Data Collection Team and fishermen. In the rare case that fishermen refuse repeatedly to provide information on their fishing activity, **contacts** from the DFMR Head of fisheries division and data collection are made with the fishermen for alleviating the problem.

Error checks

Data on complementary fishing activity data are collected on-site, during biological sampling. Observers may evaluate whether information provided on gears and quantities used (length of nets, number of hooks) are correct. In addition, cross -checks may be made for vessels over 10m length, from logbooks.

Concerning landings data, quantities are also weighted (as whole or partly in the case of large quantities) by species. Based on experience, observers may evaluate whether the information provided on the gear used for catching the different species may be erroneous.

All paper forms used for recording fishing activity data are stored. Electronic entries are checked and

may be cross-checked with data recorded in paper forms.
Data storage and documentation
Procedures have initiated for the development of a new database which will be compatible with the ICES Regional Database and Estimation System (RDBES). At the moment, data are stored electronically in protected files.
Revision
The methodology used for collecting fishing activity data by métier in parallel with biological sampling, for fleet segments not required to use logbooks, has been the same since the introduction of “métier” in data collection. The number of sampled trips though have increased considerably from 2020, following the increase of available human resources for data collection.
Confidentiality
The complementary data collection of fishing activity does not include the collection of confidential data. For all data collected by the DFMR that are related to natural persons, rules set by the General Data Protection Regulation (Reg. (EU) 2016/679) are respected and followed. A document stating how the DFMR treats personal data, complying with the GDPR, is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/page09_gr/pag09_gr?OpenDocument (in Greek).
AR comment: There were no deviations.