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

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

Commission Implementing Decision (EU) 2019/909 of 18 February 2019 establishing the list of mandatory research surveys and thresholds for the purposes of the multiannual Union programme for the collection and management of data in the fisheries and aquaculture sectors

Commission Delegated Decision (EU) 2019/910 of 13 March 2019 establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sectors

Commission Implementing Decision (EU) 2016/1701 of 19 August 2016laying down rules on the format for the submission of work plans for data collection in the fisheries and aquaculture sectors.

Commission Implementing Decision (EU) 2018/1283 of 24 August 2018 laying down rules on the format and timetables for the submission of annual data collection reports in the fisheries and aquaculture sectors.

GREECE Annual Report for data collection in the fisheries and aquaculture sectors

2020

Version 1

Athens, 31 May 2021

NATIONAL DATA COLLECTION ORGANIZATION

The Data Collection Programme is co-ordinated by the General Directorate of Sustainable Fisheries, Ministry of Rural Development and Food, under the national correspondent Dr Michael Chatziefstathiou whose contact details are:

Dr Michael Chatziefstathiou
Hellenic Ministry of Rural Development & Food
Directorate General for Fisheries
Directorate of Fisheries Policy
& Development of Fishery Products
Department of Common Fisheries Policy (CFP)
& Common Market Organisation (CMO)
150 Sygrou Ave., 17671, Athens, Greece
Tel. +30-210-9287152
E-mail : mchatzief@minagric.gr

Web link for Data Collection Programme: http://www.alieia.minagric.gr/node/20

The Data Collection Programme for Greece is carried out by two partners, the Hellenic Agricultural Organization – Demeter (ELGO-DIMITRA) that is the project's Scientific Co-ordinator and the Hellenic Centre for Marine Research (H.C.M.R.). Two institutes from each partner contribute to the realization of the NP. Specifically, from the ELGO-DIMITRA participates the Fisheries Research Institute (F.R.I) and the Agricultural Economics Research Institute (AGR.E.R.I) (see Table 1). The FRI is a semi state marine research organisation responsible for collection of scientific data on the fisheries sector in North and Central Aegean Sea, on eel on processing and aquaculture industry. The AGR.E.R. I. is also a semi state research organisation responsible for collection and evaluation of economic data on the fisheries sector. From H.C.M.R. participates the Institute of Marine Biological Resources & Inland Waters of Athens (I.M.B.R.I.W-Athens) and the Institute of Marine Biological Resources & Inland Waters of Crete (I.M.B.R.I.W-Crete). The I.M.B.R.I.W is a semi state marine research organisation responsible for the collection of scientific data on the fisheries sector in South Aegean Sea, Ionian Sea and Cretan Sea.

The contact details of the participating institutes are:

HELLENIC AGRICULTURAL ORGANIZATION – DIMITRA
Co-ordinating Organization
Address: Address: 56-58 Kourtidou & Nirvana Aven., 11145 Athens, GREECE
Tel: +30-210-8231277
E-mail : mdir@otenet.gr
Fax: +30-210-8231438

FISHERIES RESEARCH INSTITUTE (F.R.I)- ELGO-DIMITRA
Scientific Co-ordinator
Address: 64007 N. Peramos, Kavala, GREECE
Tel.: +30 25940 22691-3

Fax: +30 25940 22222
E-mail: fri@inale.gr, manosk@inale.gr;
web-site: http://www.inale.gr
Scientific Responsible: Dr Manos Koutrakis

AGRICULTURAL ECONOMICS RESEARCH INSTITUTE (AGR.E.R.I)- ELGO-DIMITRA
Address: Terma Alkmanos, str,
115 28, Ilisia, Athens, GREECE
Tel. +30-210-2756596
Fax +30-210-2751937
Email: tzouramani@agreri.gr
http://www.agreri.gr
Scientific Responsible: Dr EiriniTzouramani

HELLENIC CENTRE FOR MARINE RESEARCH (H.C.M.R.)
Institute of Marine Biological Resources& Inland Waters (I.M.B.R.I.W)-Athens
Address: 46.7 km Athens-Sounio, P.O Box 712,
190 13 Anavissos Attica Greece
Tel.: +30 210 9856702
Fax: +30 210 9811713
E-mail: amachias@hcmr.gr
Scientific Responsible: Dr. Alexis Conides

HELLENIC CENTRE FOR MARINE RESEARCH (H.C.M.R.)
Institute of Marine Biological Resources& Inland Waters (I.M.B.R.I.W)-Crete
Address: Ex-US base at Gournes P.O.Box 2214, Gournes Pediados
71500 Heraklion, Crete, Greece
Tel: +30-2810-337851
Fax: +30-2810-337853
Email: gtserpes@hcmr.gr
Scientific Responsible: Dr Giorgos Tserpes

Table 1. National data collection organization

SECTIONS	RESPONSIBLE INSTITUTES
Section 1: Biological Data	
1A: List of required stocks	**FRI - HCMR**
1B: Planning of sampling for biological variables	**FRI - HCMR**
1C: Sampling intensity for biological variables	**FRI - HCMR**
1D: Recreational fisheries	**FRI - HCMR**
Pilot Study 1: Relative share of catches of recreational fisheries	**FRI**
1E: Anadromous and catadromous species data collection in fresh water	**FRI**
1F: Incidental by-catch of birds, mammals, reptiles and fish	**FRI - HCMR**
Pilot Study 2: Level of fishing and impact of fisheries on biological resources	**FRI - HCMR**
1G-1H: List of research surveys at sea MEDITS	**FRI - HCMR**
1G-1H: List of research surveys at sea MEDIAS	**HCMR**
Section 2: Fishing Activity Data	
2A: Fishing activity variables data collection strategy	**FRI - HCMR-AGR.E.R.I**
Section 3: Economic and Social Data	
3A: Population segments for collection of economic and social data for fisheries	**AGR.E.R.I**
Pilot Study 3: Data on employment by education level and nationality	**AGR.E.R.I**
3B: Population segments for collection of economic and social data for aquaculture	**FRI**
Pilot Study 4: Environmental data on aquaculture	**FRI**
3C: Population segments for collection of economic and social data for the processing industry	**FRI**
SECTION 4: Sampling Strategy For Biological Data From Commercial Fisheries	
4A: Sampling plan description for biological data	**FRI - HCMR**
4B: Sampling frame description for biological data	**FRI - HCMR**
4C: Data on the fisheries by Member State	**FRI - HCMR**
4D: Landing locations Section	**FRI - HCMR**
SECTION 5: Data Quality	
5A: Quality assurance framework for biological data.	**FRI - HCMR**
5B: Quality assurance framework for socioeconomic data	**AGR.E.R.I**
SECTION 6: Data Availability	**FRI - HCMR-AGR.E.R.I**
SECTION 7: Coordination	**FRI**
7A: Planned regional and international coordination	**FRI - HCMR-AGR.E.R.I**
7B: Follow-up of recommendations and agreements	**FRI - HCMR-AGR.E.R.I**

CONTENTS

Text Box 1C: Sampling intensity for biological variables

General comment: This box fulfils paragraph 2 point (a)(i)(ii)(iii) of Chapter III, of the Annex of the Delegated Decision (EU) 2019/910 and Chapter I of the Implementing Decision (EU) 2019/909 on the multiannual Union programme; and Article 2, Article 4 paragraph 1 and Article 8 of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is applicable to the Annual Report.

Member State should provide by Region/RFMO/RFO/IO:

MEDITERRANEAN SEA

1. Evidence of data quality assurance

Quality evaluation can only be carried out if the information coming from Table 5A is available. If this is not the case, Member State shall provide an overview by giving information on the methodology used to assure the quality of the data collected.
e.g.: The sampling design and protocols follow the outcomes of sampling expert groups.
Use of common standard criteria agreed with other countries/groups.
Use of special packages or tools (e.g. COST ...) for calculations.
Use of sampling protocol for storage of data.
Use of sampling protocol for processing of data.
Use appropriate exploratory statistical techniques to detect outliers and anomalous registers.

The documentation and all the evidence for the quality assurance are available in Table 5A and TextBox. 5A. Sampling procedures and analyses, data quality checks and data processing are described and documented (see pdf file : "Sampling scheme and Data Quality Assurance Framework" in http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/Sampling%20scheme%20%26%20Data%20Quality%20Assurance%20Framework_2019.pdf and in https://inale.gr/wp-content/uploads/2019/10/Sampling_scheme_data_quality.pdf).

2. Deviations from the Work Plan

MS to list the deviations (if any) in the achieved data collection compared to what was planned in the Work Plan and explain the reasons for the deviations. The threshold for deviation follow those set in the former AR: <90 % and >150 %.
Explain any deviation from the proposed:
- *sampling intensity,*
- *methods used for collecting data.*
- *methods used for estimating the parameters.*

General reasons for deviations from the Work Plan in terms of planned vs. achieved should be summarised in this section, while detailed comments on deviations on particular species/stocks should be included in the AR Comments column in Table 1C. In case of Member State adding new species not included in the WP, this should be clearly explained and justified.

General comment for oversampling/under sampling.
According to sampling plan described in the NWP 2020-21, quota sampling is employed for the data collection of the biological variables (age, weight, sex ratio, maturity). The aim is to collect 3-12 specimens (depending on the species) for each size class. Data sources are the commercial fisheries, through samples collected by sampling at sea and on shore per GSA, and the scientific the surveys (MEDITS, MEDIAS), mainly for the non-marketable fraction of the stocks. The two data sources are supplementary and the planned target for each species is their sum. This, can justify the oversampling that may be noticed in one of the data sources for a species, which usually has as purpose to cover the overall target.

- *sampling intensity*
    The overall planned target was achieved with very few deviations which are described in detail below:
GSA 20
For the majority of the species the planned target was covered.

Under sampling was observed for *Scomber colias* (75%) in commercial fishery and can be attributed to the variability of the species' catch in purse seine fishery.

For the species *Eledone moschata*, *Lophius budegassa,* and *Mullus surmuletus* the under sampling in MEDITS survey was covered by samples from the commercial fishery and the overall planned number was achieved. In reverse, for the species *Mullus barbatus, Pagellus erythrinus and Trachurus trachurus* the under sampling in commercial fishery was covered by oversampling in the MEDITS survey and the overall planned number was achieved. Thus, we consider that for the above species the target was met and no deviation exists.

GSA 22

For the majority of the species the planned target was covered.

Under sampling was observed for *Sparus aurata* in MEDITS survey which was covered partially by samples from commercial fishery and the total achievement for the species is 78%. In surveys it is common to have variation from year to year on the quantity of a species in the catch and for this reason sometimes the initial target is not achieved.

For the species *Eledone moschata, Micromesistius poutassou, Nephrops norvegicus* the lower catches in MEDITS survey were covered by oversampling in commercial fishery and the overall planned number was achieved. Vice versa, for the species *Illex condetii, Lophius budegassa, Mullus barbatus* the under sampling of commercial fishery was covered by samples from MEDITS survey. Thus, we consider that for the above species the target was met and no deviation exists.

GSA 23

The target was achieved for all the species apart from *Mullus surmuletus* in MEDITS survey for sex ratio and sexual maturity variables. However, the sample was covered from commercial fishery and the total achievement for the species is 93% for the aforementioned variables and 117 for all the others.

ICCAT SPECIES

The target was covered for all the species and variables.

EEL

Due to administrative constrains the project was not done for Western Greece and West Peloponnese (EMU1 and EMU2, respectively) resulting in diminished sampling (see also TextBox 1E).

- *methods used for collecting data*

There was no deviation in the methodology used for collecting data. The procedure described in NWP was followed.

- *methods used for estimating the parameters*.

There was no deviation in the methods used for estimating the parameters. The procedure described in NWP was followed

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

Although there were few and sometimes unpredictable deviations (in the case of surveys) MS will continue to make efforts to meet its obligations in full. Regarding eel sampling, the call for tenders for EMU 1 & EMU 2 has been delayed due to COVID-19 pandemic and has been rescheduled for the 2nd half of 2021.
(max. 1000 words per Region/RFMO/RFO/IO)

Text Box 1D - Recreational fisheries

General comment: This box fulfills paragraph 2 point (a) (iv) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 3 and Article 4 paragraph 1 of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is applicable to the Annual Report. This box is intended to provide information on the design, implementation and analysis of all components of sampling schemes/ surveys that are listed in Table 1D.

1. Description of the target population
The target population and the elements of this target population accessibility, need to be defined and described in this section. In the case of Recreational Fisheries, the target population could be whole population of resident anglers, charter boats etc. This will permit to evaluate if all sectors contributing to the total catch, are included in the survey.

According to national legislation, there is official ban for most of the species -relevant for Mediterranean Sea- for which data should be collected for recreational fisheries (eels, elasmobranchs and highly migratory ICCAT species). For the identification of other highly migratory ICCAT species and elasmobranchs pelagic & demersal, relevant for the Mediterranean, that are not included in the official bans and are propably targets of recreational fishery, MS is running a pilot study that is described in Text box "Pilot Study 1"

2. Type of survey
In Table 1D, the methodology or type of survey used must be included, but any information about the design is missing. Table 5A in the Work Plan allows to identify if the sampling design is documented and where it can be found. Are the surveys identified correctly in table 5A and information about sampling design provided under this table?
If the answer is No: information on the design should be included in this section of the Annual Report (e.g.: stratification, selection of PSU, is sampling probability base etc.).

Not applicable

3. Data Quality
Information about non-responses and refusals is found in the Work Plan, Table 5A. Are non-responses and refusals recorded in table 5A?
If the answer is No: information on recordings of non-responses and refusals should be included in this section of the Annual Report.

Not applicable

4. Data Analysis and processing
Information about data processing is found in the Work Plan, Table 5A. Are the editing and imputation methods documented and identified?
If the answer is No: information on estimation procedures should be included in this section of the Annual Report, following the questions below:
Does the estimation procedure follow the survey design?
Has the precision of the estimates been calculated and documented?

Not applicable
(max. 900 words per survey)

Pilot Study 1: Relative share of catches of recreational fisheries compared to commercial fisheries

General comment: This box fulfils paragraph 4 of Chapter II of the Annex of the Implementing Decision (EU) 2019/909 on the multiannual Union programme and Article 2 and Article 4 paragraph (3) point (a) of the Implementing Decision (EU) 2016/1701 on the format of the WP.

General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study.

1. Aim of pilot study

The recreational fishery is a popular activity with great economic and social value in Greece. The legal framework for the collection of catch data from the recreational fishery of the EU Member States is governed by Commission Implementing Decision 2017/1701, Commission Decision 2008/949/EU and Ministerial Decision 5632/104626/2015. Greece has the obligation to report data for eel, elasmobranchs and highly migratory species (ICCAT Convention). However, the recreational fisheries of eel, bluefin tuna, albacore, swordfish and a certain number of elasmobranch species is prohibited while data for the rest are either not existent or not recorded since the recreational fishing activity is not monitored in the country and no licensing system exists.

In order to plan comprehensive and solid future actions for the monitoring of recreational fisheries, a pilot study is already under way with a view to estimate, as accurately as possible, a number of parameters relating to recreational fishermen and their catches in Greece. For the period 2020-21 the aim is to enhance the results and conclusions of the pilot study carried till the end of 2019. The primary objectives for the years 2020-21 will be: a) to record the recreational fishermen (RFs) number, practices and activity b) to collect biological and quantitative data of their catches. The study covers all types of recreational fisheries in Greece namely boat, coast and spearfishing.

2. Duration of pilot study

The study will continue in the years 2020 and 2021. During this period, a small-scale "on-site" sampling program will be conducted, in parallel with an off-site survey, in order to collect additional independent data on catches, size and composition of fish caught by RFs.

3. Methodology and expected outcomes of pilot study

The methodology will consist of both off-site and on-site sampling survey.

The total population of fishermen in the country was estimated in the initial phase of the study through two telephone surveys revealing important information not only about the total population of recreational fishermen in the country but also about practices, economics, catches, quantities of catches, perceptions, interactions of the activity with marine species etc.

Diary Survey

From the pilot study of the previous period, became a list of recreational fishermen willing to participate in the diary survey. This list will be used to draw participants for the 2020-21 period. Furthermore, efforts will be made to increase participation for the off-site survey through more direct contacts with recreational fishermen and their organisations as well as the use of social media. The off-site survey will give the opportunity to the participating RFs to report the fishing trips using more than one ways of various difficulty and convenience:

a) by post. The chosen participants will be sent an envelope containing diary sheets, instructions on how to fill them out.

b) a mobile application will be developed in order to provide users with a more modern, easy and immediate mode to record the necessary data and

d) an internet site dedicated to that end where participants can download, fill and sent their diary to the researchers online.

These choices will be promoted to all available contacts, media and press in order to maximise the number of the participants. Thus, RFs will have more than one ways to report the data required for the study.

On site sampling

Onsite sampling will be carried out in parallel with the diary survey. FRI & HCMR collaborators will record biological data from selected geographical areas in an effort to cover a representative part of the country, which include, piers, ports, beaches and remote sites, to record in situ all fishing activities (boat, coast and spear fishing) and catches (species, numbers and weight) in order to validate the reliability of the data reported from the off-site survey. Integration of self-reporting tools with independent monitoring tools (such on-site sampling programmes) allows for cross-checking and audit of self-reported data and also increases incentives within the recreational fishery community to provide accurate self-reported data.

Upon completion of the study critical qualitative and quantitative data on recreational fishing in Greece will be identified and evaluated providing a more complete picture of the recreation fishing activity in the country.

(max 900 words)

Brief description of the results obtained (including deviations from planned and justifications as to why if this was not the case).

The pilot survey after the period 2017-2019 has been extended for the period of 2020-2021 during which only the "on-site" survey has been realised due to the impacts of the Covid-19 pandemic. The survey remains multi-species, and the aim is to combine off-site and on-site sampling with in-person interviews of all modes of fishing.

Management of recreational fishing during the 2020 period of pandemic, included long periods of prohibition and severe restrictions, specifically with respect to recreational fishing, that set significant setbacks to the sampling efforts, increased frustration and vexation amongst the recreational fishing community and undermined the consolidation of cooperation and the future application of the sampling program. Although the means created for recreational fishing self-reporting (https://erasitexniki.inale.gr/) is long ready to be used, the aforementioned reasons led to postponing all efforts to recruit participants for the off-site survey through more direct contacts with RFs and their organisations as well as the use of media and social media. If pandemic crisis and the restrictions that have been imposed to recreational fishing will not be normalized, then it is doubtful whether the off-site sampling will be attempted in 2021, in order to avoid compromising the future sampling efforts.

Due to Covid-19 measures of prohibition and restrictions the 1st and 4th scheduled seasonal on-site sampling trips were canceled. When bans and restrictions alleviated during the 2020, the on-site survey continued with the 2nd and 3rd seasonal sampling trips. Furthermore, in an effort to increase representation, the FRI mobilised its collaborators who work as correspondents in areas of interest and managed to extend the sampling geographically in North and Central Aegean and Ionian Sea. This was not possible to areas of the South Aegean and Crete (see fig 1).
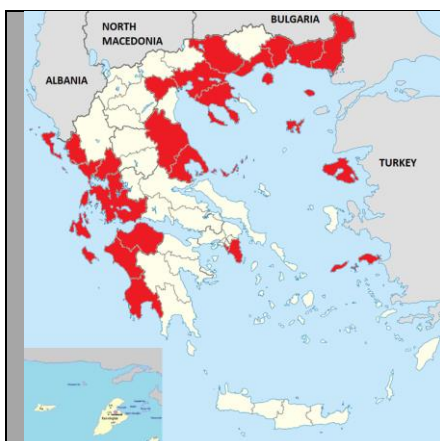
Figure 1. Sampled areas during the 2020 on-site survey.

The total fishing trips recorded were 1527 in all areas of sampling, with Sparidae being the most common catch.

In the North Aegean 1071 trips (692 coast, 272 boat, 107 spearfishing) were recorded and 84 species caught altogether (fig 2). The main species kept were *Trachurus* spp (9.1%), *Diplodus annularis*, (7.4%) *Serranus cabrilla* (7.1%), *Sparus aurata* (6.9%), *Pagellus erythrinus* (6.5%), *Loligo vulgaris* (5.8 %), *Diplodus vulgaris* (4.7%), *Boops boops* (3.9%), *Scomber colias* (3.6%) and *Pagellus acarne* (3.1%). The main species released were *D. annularis* (22%), *P. erythrinus* (8.8%) and *D. vulgaris* (7.3%) most of them released alive and due to small sizes.
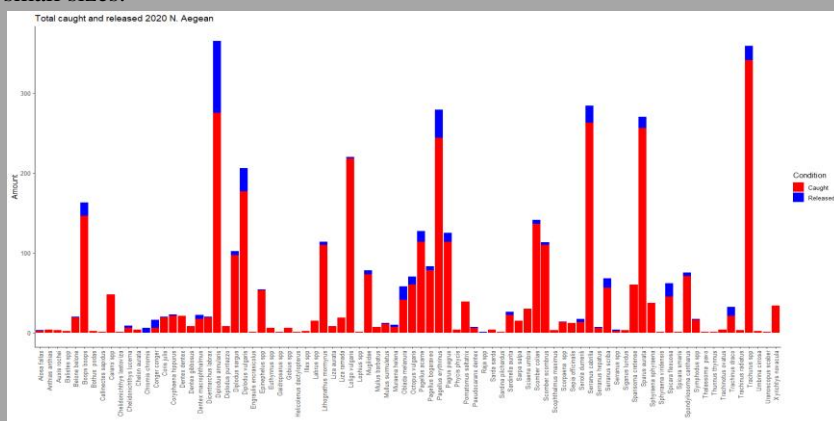
Figure 2. Species caught in the North Aegean during the 2020 on-site survey.

In the Ionian Sea, a total of 178 fishing trips (122 coast, 55 boat, 1 spearfishing) were recorded and 64 species caught altogether (fig 3). The main species kept were *P. erythrinus* (18.5%), *S. aurata* (16.4%), *D. annularis* (8.4%), *Dentex maroccanus* (6.3%), *Diplodus sargus* (6.1%) and the main species released were *D. annularis* (20.6%), *D. sargus* (11.6%), *P. erythrinus* (9%), *S. aurata* (9%), and *Pagrus pagrus* (7.1%).

Figure 3. Species caught in the Ionian Sea during the 2020 on-site survey.

11

In the Saronikos Gulf a total of 278 trips (240 coast, 26 boat, 12 spearfishing) were recorded with 47 species caught altogether (fig 4). The main species kept were *P. acarne* (17.1%), *Siganus rivulatus* (15.1%), Mugilidae (11.2%), and *D. annularis* (5.7%). The main s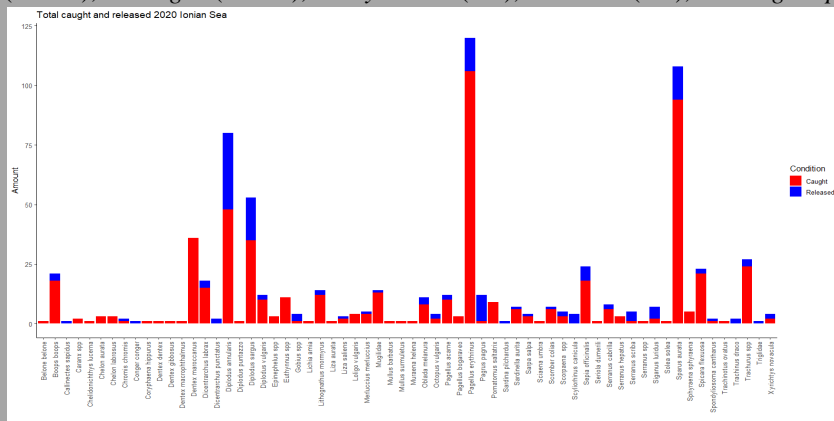pecies released were *S. aurata* (20.2%), *Chromis chromis* (13.1%), *S. cabrilla* (10.7%), *D. annularis* (8.9%), and *C. julis* (6.5%).

Figure 4. Species caught in Saronikos Gulf during the 2020 on-site survey.

4. Achievement of the original expected outcomes of pilot study and justification if this was not the case.
The original expected outcomes of the pilot study were achieved by the realisation of a number of the scheduled seasonal sampling trips when the opportunity was given and by expanding the network of interviewers hence increasing spatialy the coverage of the sampled area. The impacts of the Covid-19 pandemic and the management restrictions imposed during 2020, practically prohibited recreational fishing, creating significant setbacks to the sampling efforts. Half of the seasonal sampling efforts (1st and 4th quarters) were cancelled in 2020 due to bans imposed on recreational fishing for two long periods and various restrictions during the remaining year, disrupting the scheduled sampling program. In order to compensate this and mainly to increase the spatial distribution of the sampling effort, the sampling areas were extended geographically in North and Central Aegean and Ionian Sea.

5. Incorporation of results from pilot study into regular sampling by the Member State.
For the period 2021 the pilot study will continue (depending on the progress of the epidemic and the measures that will apply) with the aim to continue the on-site survey with face-to-face interviews conducted as scheduled, in order to collect independent data on relevant parameters. Also, aim of the 2021 actions is to set in motion the off-site sampling scheme supplementing collected data, with the addition of on-line platforms for self-reporting. Moreover, actions will be implemented in order to strengthen the culture of participation in RF community throughout the country.

The processing of the data for the total period of the pilot study (2017-2021) will be completed at the end of 2021 and the results will be presented in the next AR and the relevant WGs. The appropriate sampling methodology will emerge from the experience gained during the pilot research and will be incorporated into the regular sampling that is scheduled for the period 2022-24. Preliminary results of the first period of pilot study (2017-2019) were already presented in the Report on the Pilot study 1 that was submitted at 8/3/2021 in the relevant request.

(max 900 words)

Text Box 1E: Anadromous and catadromous species data collection in fresh water

General comment: This box fulfills paragraph 2 points (b) and (c) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 of the Implementing Decision (EU) 2016/1701 on the format of the WP.

General comment: This box is applicable to the Annual Report.

1. Method selected for collecting data.

For the three EMUs, where eel populations exist in Greece (EMU 1, EMU 2 and EMU 3), biological data (length, weight and age) on silver eels (*Anguilla anguilla*) populations will be collected. The silver eels samples are collected from the permanent installed fishing devises in the channel connecting the lagoons with the sea that are operated by Fishing co-operatives. These devices catch all the descending (silver) eels, 30% of which are released based on the Hellenic Eel Management Plan.

For the period 2020 – 2021 a sampling scheme will be adopted following the already used methodology by other countries. This methodology is spatially stratified based on the assessment of all EMUs', where eels are present, in a three year period.

For silver eels (descending eels), data on length and weight will be collected on site in each EMU every year (Fisheries dependent). Further samples will be collected for gathering biological variables, such as age and sex.

As for the non-commercial part of the population (glass and yellow eels) (Fisheries independent), the abundance of the standing population (yellow and silver eels) will be performed by fyke nets. The data for the yellow eels (number and age classes) will be used to calibrate the Eel Population Dynamics Model (Aschonitis et al. 2015), which in return will provide data on stock (yellow eels and silver eels), recruitment of glass eels in the lagoons and survival rates.

As it was mentioned, the sampling scheme includes the use of fyke nets placed consecutively (100 m total length). The fyke nets will be placed in random stations in the lagoon and their position will be changed every week trying to cover the whole area of the lagoon.

More intense samplings will be performed for the capture of glass eels for the determination of the recruitment (as a mean to validate also the Eel Population Dynamics Model). The capture of the glass eels will be performed by implementing various methodologies, such as traps made specifically for this purpose. Additionally, there is a request from Regional Coodrination Group (RCG) Mediterranenan and Black Sea to WGEEL to assist in identifying the most appropriate methodology for the assessment of the glass eels recruitment in the Mediterranean Countries (i.e. electrofishing in rivers, fyke nets etc.).

Reference

Aschonitis V.G., Castaldelli G., Lanzoni M., Merighi M., Gelli F., Giari L., Rossi R., Fano E.A., 2017. A size-age model based on bootstrapping and Bayesian approaches to assess population dynamics of Anguilla anguilla L. in semi-closed lagoons. *Ecology of Freshwater Fish*, 26: 217–232.

(max 250 words per Area)

2. Were the planned number achieved? Yes/ No
If answer is No, Member State shall explain why not, and what measures were taken to avoid non-conformity.

Fisheries Dependent data
Silver eels: according to the Greek National Working Plan 2020-21, the biological data and variables for silver eels was designed to be collected from a different EMU every year. Due to administrative constrains the project was not done for Western Greece and West Peloponnese (EMU1 and EMU2, respectively) resulting in diminished sampling. For this reason, the implementation of the WP started from EMU3. For 2020 the samplings were performed in EMU3, where in total 96% of the samples required by the WP was achieved.

Fisheries Independent data

Yellow eels: the administrative constrains for the project which was not yet done for Western Greece and West Peloponnese (EMU1 and EMU2, respectively), in combination with the situation created by the Covid-19 pandemic (restrictive mobility measures that were imposed all over the country) prevented the sampling for yellow eels in EMU1 and EMU2. Nevertheless, additional samplings were performed in the estuarine system of Vistonida (EMU3), however they were limited, due to the travel restrictions that imposed all over the country, associated with COVID-19 pandemic. During 2020 all otoliths collected from yellow eels, captured in Lake Vistonida (EMU3) were processed and the age determination process have started, which is expected to be finished in 2021. The age determination data, together with the morphometric data will feed the Eel Population Dynamics Model in order to be calibrated.

Glass eels: More samplings were performed in 2020 for glass eels, using fyke nets, but they were delimited by the situation created by the Covid-19 pandemic. However, no glass eels were captured during the samplings, which means that the abundance is too low to be detected. Due to the ongoing failures to capture glass eels no additional samplings will be performed in 2021.
Data on the glass eel recruitment will be provided by the Eel Population Dynamics Model, as described in the WP, after it will be calibrated with the data gathered from EMU3 (see above).
Finally, the "Methodology and Data Quality Assurance Framework for anadromous and catadromous species", was prepared and it is available in the website of the Ministry of Rural Development and Food
http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/GREECE%20Eel%20Methodology-data%20QAF_2020.pdf

(max 500 words per Area)

Text box 1F: Incidental by-catch of birds, mammals, reptiles and fish

General Comment: This box fulfils paragraph 3 point (a) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910, on the multiannual Union programme; and Article 2 of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is applicable to the Annual Report. This box is applicable only for those sections where Member States have reported that they have been carrying out regular sampling. Results and deviations for Pilot studies should be reported under Pilot Study 2.

1. Results
Member States shall fill in Table 1F and provide additional information, if available, in this text box. For example, species (or family) identification, number of samples, and the state of the animals incidentally by-caught (i.e. were they released alive, dead, or collected for sampling).

The monitoring of the incidental by-catch of PET species is part of the pilot study that MS implements and is reported under Pilot Study 2.

2. Deviations from Work Plan
Member States shall list the deviations (if any) in the achieved data collection compared to what was planned in the WP and explain the reasons for the deviations.
Explain any deviations from the proposed:
- sampling intensity
- methods used for collecting data

 Not applicable

3. Data quality
Member States shall provide information on sampling protocols and sampling design for incidental by-catch data collection.
 Questions to be addressed are listed below:
- Does the onboard observer protocol contain a check for rare specimens in the catch at opening of the codend? If YES is the observer instructed to indicate if the codend was NOT checked in a haul?
- In gill nets - and hook-and-line fisheries: does the onboard observer protocol instruct the observer to indicate how much of the hauling process has been observed for (large) incidental bycatches which never came on board (because they fall out of the net)? 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"?
-Does the onboard observer protocol instruct to report on the use of mitigation (i.e. Escape Devices or Acoustic Deterrent Devices)?
- 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.
- Are data quality issues taken into account?
- How are data (and samples) stored

Not applicable

(max 900 words)

Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem

General comment: This Box fulfills paragraph 3 point (c) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 and Article 4 paragraph (3) point (b) of the Implementing Decision (EU) 2016/1701 on the format of the WP.

General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study.

1. Aim of pilot study

Under the provisions of the Commission Decision (EU) 2016/1251, Member States (MS) are obliged to collect data to assess the impact of fisheries on marine ecosystems. These data should provide information on the:
(a) incidental by-catch of Protected, Endangered & Threatened (PET) species,
(b) marine habitats, and
(c) marine biological resources and ecosystems.
Greece, in coordination with other MS under the Regional Co-ordination Group for the Mediterranean and Black Sea (RCG Med&BS), has already begun and is currently conducting a pilot study aiming to measure and monitor the fisheries' impact on the marine ecosystems within the aforementioned framework.

2. Duration of pilot study
The duration of the pilot study is 36 months (2018-2020).

3. Methodology and expected outcomes of pilot study
Greece has designed a pilot study suitable to cover the objectives of the aforementioned scheme.

(a) Impacts of fisheries on incidental PET by-catch.
Following the recommendations of the RCG Med&BS-2017, Greece has planned and implemends a monitoring scheme for the incidental PET by-catch based on the outputs of the MARE/2014/19 project. Sampling is been carried out by on-board observers. Observers were instructed to check at the opening of the cod-end and observe the whole shorting process for PET specimens; alternativelly they should estimate the proportion of the cod-end and the shorting process they observed. Additionally, to ensure data quality, observers should photograph the haul at the opening of the cod-end, before the shorting process begins, as well as specimens of rare species caught. A list of relevant to the program species has been created, consisted of species included in the 1D table of the Decision 2016/1251 (with obligation for the Mediterranean Sea), as well as species within ANNEX 1 of the GFCM report on the Methodology for incidental catch of vulnerable species data collection (FAO, 2019). To record data for these species, Greece will adopt the sampling protocols provided FAO (2019) report (Annexes 3 and 4). These protocols, require the recording of standard DCF measurements as well as additional information such as specific body size measurements, weight, sex determination, the estimation of by-cought specimen condition etc.
Following the recommendations of the RCG Med&BS 2017 Greece has planned to record incidental PET by-catch on bottom trawlers (2018), on longlines (2019) and on set nets (gillnets) (2020) for the GSAs 20, 22 and 23. The sampling scheme is designed in a way that ensure that all samples and sub-samples are properly randomized, spatially and temporally stratified, and sufficiently replicated for reasonable precision levels. Furthermore, the national database has been appropriately modified to be able to accept the corresponding data. Finally, the relevant data will be processed on a quarterly basis based on the methodology described by FAO (2019). The monitoring scheme for the incidental PET by-catch for 2021 will be decided within 2020, based on a preliminary process on the outcomes of the first two years of the pilot study.

(b) Impact of fisheries on marine habitats.
Marine ecosystems' structure and function is greatly affected by their spatial heterogeneity. The spatial distribution of ecosystem resoures also affects (and is being affected by) the allocation of fishing activities.

Therefore, it is essential to provide spatially explicit indicators of the fishing effort to be able to define and evaluate possible future management measures. The estimation of the impact of fisheries on marine habitats will be based on the analysis of Vessel Monitoring System (VMS) data, a collection system of fishing activity data in space and time, obligatory for fishing vessels of 12 metres' length overall or more, as well as for vessels with fishing authorizations (e.g. beach seines and vessels targeting large pelagics).

The VMS data will be processed with VMSbase R package, a software devised to manage, process and visualize VMS fishing vessels activity information (Russo et al., 2014). The outputs of the analysis will be the estimation of the spatial effort of the fisheries (per metier) in respect with a-selected grid. Based on this, two DCF ecosystem indicators will be calculated:

- Indicator 5 - Distribution of fishing activities: total area of cells within which fishing effort is allocated, per month, per métier, and
- Indicator 6 – Aggregation of fishing activities: total area of cell scoring 90% of total observed fishing effort.

(c) Impact of fisheries on marine biological resources and ecosystems.

Recently, the focus of fishery assessment and management is being shifted by single species assessments to an ecosystem approach, in an attempt to quantify both the direct and indirect effects of fisheries on marine ecosystems. This ecosystems-based approach requires, between others, a methodological approach able to quantify the impacts of fisheries on the interspecific relationships of marine species. Based on this framework, Greece will focus on the fish feeding ecology through sampling, processing and analysing the stomach contents of targeted species. More specifically, as was agreed in RCG & MED 2017, for 2020 Greece is planning to continue a pilot study based on the collection of *Merluccius merluccius* stomachs from the MEDITS survey carried out from the Fisheries Research Institute in GSA22. As planned in the WKSTCON ICES Workshop (2018) Greece will collect 20 individuals by 10 cm length classes (minimum of 100 individuals, by adjusting the sample for each size class depending on the range). The individuals with stomach reverted should be avoided.The stomach content will be analysed with a methodology proposed by the EU MARE/2014/19. For 2021 the way forward for the pilot study on the monitoring of fish stomach contents will be discussed in RCG MED & BS 2020.

References

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.

MARE/2014/19 -SI2.705484 Strengthening regional cooperation in the area of fisheries data collection in the Mediterranean and Black Sea. Deliverable 3.2 Handbook with guidelines for monitoring incidental by catch and processing the collected data.

Russo T., D'Andrea .L, Parisi A., Cataudella S., 2014. VMSbase: An R-Package for VMS and Logbook Data Management and Analysis in Fisheries Ecology. PLoS ONE 9(6): e100195. doi:10.1371/journal.pone.0100195
(max 900 words)

Brief description of the results obtained (including deviations from planned and justifications as to why if this was not the case).

(a) incidental by-catch of Protected, Endangered & Threatened (PET) species

In accordance with RCG Med&BS – 2017, in 2020 Greece recorded the incidental by-catch of Protected Endangered and Threatened (PET) species by on-board observers. in static nets (trammel nets, gillnets). The number of trips recorded for 2020 (trammel nets) were 238 for GSA22, 186 for GSA20 and 37 for GSA23 respectively and in gillnets were 207 in GSA22, 64 in GSA20 and 14 in GSA23.

In GSAs 20, 22 and 23 no single mammal, bird or reptile incidental by-catch was recorded in the entire sample. The PET species specimens found in the three GSAs were:

Gear	Species	GSA 20	GSA 22	GSA 23
GNS	*Alosa fallax*		11	
	Anguilla anguilla		1	
	Bolinus brandaris		2	

	Species			
	Epinephelus marginatus	1		1
	Galeorhinus galeus		1	
	Gymnura altavela		1	
	Mustelus mustelus	3		
	Oxynotus centrina			1
	Sciaena umbra	1	21	
	Umbrina cirrosa		7	1
GTR	*Alosa fallax*	4	30	
	Bolinus brandaris		2	
	Eledone moschata	1	2	
	Eledone spp.	1		
	Epinephelus marginatus	1	6	2
	Galeorhinus galeus		1	
	Gymnura altavela	1	1	
	Hippocampus hippocampus		2	1
	Mustelus mustelus	1	9	
	Rostroraja alba		1	
	Sciaena umbra	47	191	4
	Squalus acanthias		9	
	Umbrina cirrosa		29	1

Data quality

The sampling protocols which were used were provided by FAO (2019) report and each of them refer to a specific marine species group. More specifically, Protocol 2 is dedicated to fish, sharks & rays, Protocol 3 to cetaceans, Protocol 4 to sea turtles and Protocol 5 to birds. These protocols except for the recording of standard DCF measurements, require additional information such as specific body size measurements, weight, sex determination, the estimation of by-caught specimen condition etc. Sampling has been carried out by on-board observers. The applied sampling scheme for this pilot was the corresponding Sampling Plan for Biological Data, which is a spatially and temporary stratified sampling scheme which ensures that all samples and sub-samples are properly randomized and sufficiently replicated for reasonable precision levels (detailed description in Anonymous 2019).

The on-board observers follow training courses by experts on rare PET species identification. To fulfil the requirements of the working plan, observers have been instructed to observe during the whole hauling process to be able to record any large incidental by-catches that never came on board. They were also instructed to observe the whole process of shorting. In circumstances where this was not feasible, observers were instructed to give an estimate of the proportion of the shorting process that they observed. Additionally, even though mitigation devices are hardly ever used by the Greek fishing fleet, observers have been instructed to report their use, whenever it is observed. Finally, an additional measure to ensure the quality of provided data was the instruction to photograph the entire haul, after the retraction of the net, and before the shorting process begins. Whenever it was possible, observers also photographed the specimens of rare species caught, and, if feasible, they retained them to record biological parameters in the laboratory. The recorded data are stored in a database, which was appropriately modified to be able to accept the corresponding data. The sampling design as well as additional issues concerning the storage, maintenance and analyses of the relevant data were based on the outcomes of the Joint WGBYC-WGCATCH Workshop on sampling of bycatch and PET species (WKPETSAMP, ICES 2019) as well as on the Working Group on Bycatch of Protected Species (WGBYC, ICES 2018)

(b) Impact of fisheries on marine habitats
This part of the pilot study could not be conducted, since the necessary data, mainly VMS data, although requested, they were not made available.
(c) Impact of fisheries on marine biological resources and ecosystems
During the WKSTCON 2018, the available methodologies for the stomach content analysis were reviewed and it was agreed to carry out a pilot study on one single species: Mediterranean hake *Merluccius merluccius* in the Mediterranean and *Psetta maxima* in the Black Sea. The selection of Mediterranean hake was commonly agreed

among the participants as it is a highly commercial species, targeted throughout the Mediterranean and its stock is being assessed. Thus, based on the methodology proposed in the MARE/2014/19 Med&BS project and in closer collaboration with the MARE/2016/22 STREAM project, a common sampling protocol at Mediterranean level was proposed and implemented. According to the amended annual plan for the country (Anonymous, 2018), the Fisheries Research Institute of Kavala (Greece) performed a pilot study on hake (Merluccius merluccius) in the GSA 22-North Aegean Sea during 2020 and extended that to 2021.

More specifically, hake stomach samples were collected from the GSA 22-North Aegean Sea, during the MEDITS (Mediterranean International Bottom Trawl Survey) trawl survey, at the summer of years 2020. Hauls were realized during daylight at the standard fishing speed of 3 knots on the ground, and the duration was 30 min at depths shallower than 200 m and 60 min at depths greater than 200m. Trawl survey was done using a standard GOC 73 trawlnet having a cod-end mesh opening of 20 mm. The total length (in mm) and total weight (in g) of the individuals was measured, and were also sexed. Stomach contents of hake were collected by 100 mm size classes or a minimum of 100 individuals, by adjusting the number of individuals for each size class depending on the size range. The stomachs were extracted of the fish's abdominal area carefully with a knife or scissors, starting from anus, to avoid cutting internal organs, without pressing the stomach cramps. The stomachs were preserved frozen at -20oC and analyzed in the laboratory.

Gut contents were analyzed with a stereomicroscope to identify prey items, which were counted, weighted and, if the state of digestion would allow it, measured. Prey items were identified to major prey taxa and, when possible, at species.

In 2020, 145 stomachs were collected. The sample size distribution of the fish collected for stomach content analysis during the MEDITS survey is presented in Table 1.

Table 1

Length Classes	Total Number of fish
0-99	12
100-199	32
200-299	43
300-399	44
400-499	12
500-599	1
600-699	1
TOT	145

According to the analysis performed, the results indicate that, Osteichthyes were the most important prey item (>80% W%) followed by Decapoda (>15% W%) and Cephalopoda (4% W%). The importance of European anchovy *Engraulis encrasicholus* (23 W%) in the diet of Mediterranean hake sampled in the GSA 22, for 2020, should be noted. On the other hand, the most important decapod pray was *Parapenaeus longirostris*, constituting the 8% W%.

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

The original expected outcomes of this pilot study have been achieved for incidental by-catch of PET species as well as for the stomach content analysis.

5. Incorporation of results from pilot study into regular sampling by the MS
For PET sampling, taking into consideration the results of the pilot study we intent to include into the regular sampling the bycatch monitoring on bottom trawls, longlines and gillnets-trammel nets, in GSAs 20, 22 and 23. The pilot revealed that monitoring could provide valuable information on the impact of fisheries on incidental by catch of PET species. Furthermore, the inclusion of these metiers, will provide information on the interannual variation of the corresponding data. Greece intents to coordinate at a regional level with other Mediterranean MS

(through RCG-Med and BS) therefore the final decision on the metiers that will be monitored for PETS as well as the list of species that will be included in the monitoring program will be decided after the RCG-Med and BS 2021.

The pilot study on the diet of hake was a useful exercise to understand how we can, practically, incorporate diet analysis in the DCF. Samples were easily collected on board by the personnel employed for the MEDITS survey and the time needed wasn't excessive. MS intends to continue in regular sampling with the species Merluccius merluccius for stomach content analysis, due to the ease of handling the stomach samples and the well-defined sampling design. During the RCG MED & BS 2021 it will be discussed and decided whether more fish species will be added to normal sampling, and will be further decided the species-specific methodology on stomach content sampling.

References

Anonymous, 2018. Greece Work Plan for data collection in the fisheries and aquaculture sectors 2017-2019 Version 2 – 2019.

Anonymous, 2019. GREECE - Sampling scheme and Data Quality Assurance Framework. National Data Collection Programme 2019. 13 pp. Available at: https://inale.gr/wp-content/uploads/2019/10/Sampling_scheme_data_quality.pdf

ICES. 2018. Report from the Working Group on Bycatch of Protected Species (WGBYC), 1–4 May 2018, Reykjavik, Iceland. ICES CM 2018/ACOM:25. 128 pp

ICES. 2019. Joint WGBYC-WGCATCH Workshop on sampling of bycatch and PET species (WKPETSAMP), 24–26 April 2018, SLU Aqua, Lysekil, Sweden, ICES CM 2018/EOSG:35. 76 pp.

WKSTCON, 2018. Report Workshop on sampling, processing and analyzing the stomach contents (WKSTCON) 24-27 April 2018 Palma de Mallorca, Spain ma de Mallorca, Spain.

MARE, 2014. Strengthening regional cooperation in the area of fisheries data collection (MARE/2014/19).

MARE, 2016. Strengthening regional cooperation in the area of fisheries data collection (MARE/2016/22).

(max 900 words)

Text Box 1G: List of research surveys at sea

MEDIAS

General comment: This box fulfills Chapter I of the Annex of the Implementing Decision (EU) 2019/909, on the list of mandatory surveys and thresholds, of the multiannual Union programme; and Article 2 and Article 7 paragraph (3) of the Decision (EU) 2016/1701 on the format of the WP. It is intended to specify which reseach surveys at sea set out in the multiannual Union programme will be carried out. Member States shall specify whether the research survey is included in Chapter I of the Annex of the implementing decision of the multiannual Union programme or whether it is an additional survey.

General comment: This box is applicable to the Annual Report. This box should provide complementary information on the performance of the surveys, the results and their main use.

1. Objectives of the survey

The objectives of the MEDIAS carried out in the Hellenic part of GSAs 22 and 20 are:

- Assess total pelagic fish echo abundance per EDSU.

- Assess Abundance and Biomass indices estimation of the target species, anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) in the surveyed area by means of acoustics.

- Collect biological information for the population of the target species in the surveyed area by means of midwater trawl hauls.

- Estimate Age and length structure of the population of the target species.

- Collect biological information for all pelagic species represented in the catch composition of the midwater trawl hauls (i.e. Length frequency distribution and Length – Weight relationships).

- Collect environmental information based on CTD sampling in predefined sampling stations

- Assess ecosystem indicators derived from acoustic surveys as described in the MEDIAS handbook (2017) upon request.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The methodology applied in the Pan-Mediterranean International Acoustic Survey (MEDIAS) carried out in the Hellenic part of GSAs 22 and 20 is the one described in the MEDIAS manual (see MEDIAS Handbook 2017).
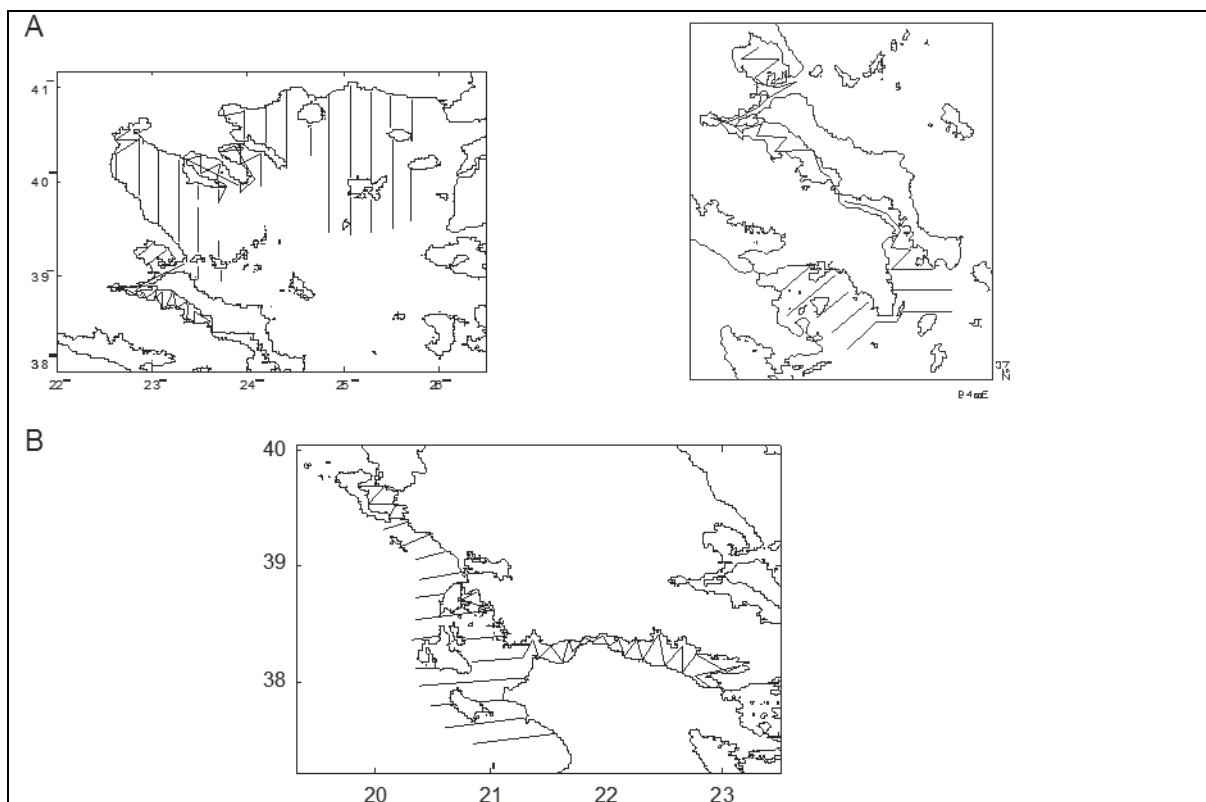
Fig. 1G.1. Pre-defined MEDIAS acoustic transects in Aegean Sea (GSA 22) and Ionian Sea (GSA 20).

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

The Mediterranean International Acoustic Survey (MEDIAS) in Hellenic waters (GSAs 22 and 20) is carried out with the R/V PHILIA owened by the Hellenic Centre for Marine Research. The Institute of Marine Resources and Inland Waters of the Hellenic Centre for Marine Research is the body that carries out MEDIAS in Hellenic waters. The MEDIAS steering committee is the relevant international group in charge of planning the survey.

4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

Not applicable

5. Explain where thresholds apply

Not applicable

(max. 450 words per survey)

6. Graphical representation (map) showing the positions (locations) of the realized samples.
Member State shall provide maps presenting the spatial distribution of the main sampling types obtained during the survey.

Aegean Sea (GSA 22) MEDIAS survey

The size and the geographic distribution of anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) stocks in northern Aegean Sea (GSA 22) were estimated with the acoustic methodology. The methodology of the acoustic survey follows the protocol of MEDIAS so that results are harmonized and comparable to the other Mediterranean areas.

Acoustic echoes were registered continuously along 59 pre-defined transects in the northern Aegean Sea during June-July 2020 (Fig. 1) with a Simrad ES38-7, 38 kHz split-beam echo sounder transducer. The size of the Elementary Distance Sampling Unit (EDSU) was one nautical mile. The partitioning of integrated deflection was done by comparing the echogram at corresponding times. Echograms were examined in order to identify school marks that characterize anchovy and sardine in conjunction with the target strength of each species. Acoustic survey covered a total area of 29161 Km2 in the northern Aegean Sea. In order to estimate anchovy's and sardine's biomass, the weight-length relationship is required as well as species length frequency distribution per area. Therefore, 15 pelagic trawls were held along transects in the positions of high fish concentrations.

Hydrographic parameters were recorded over a grid of 33 sampling stations in northern Aegean Sea (Fig 2). At each station of the sampling grid vertical profiles of temperature and salinity were obtained by a Temperature-Salinity-Depth (CTD) system SBE-19 of Seabird Electronics. Plankton sampling was not conducted in northern Aegean Sea due to limitation in research vessel time availability.
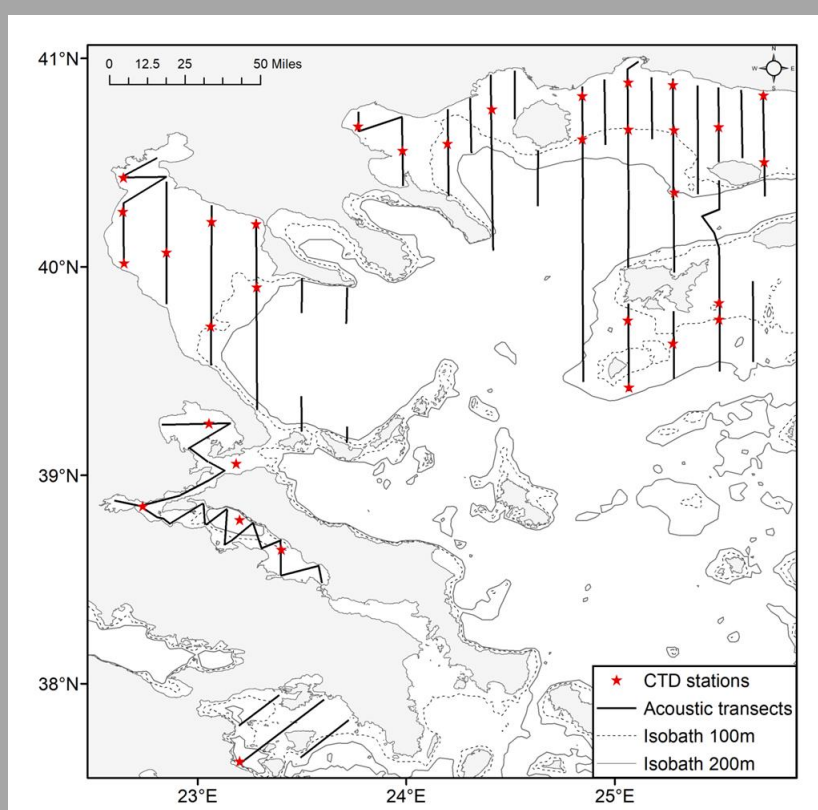

Fig 2. Acoustic transects sampled in the MEDIAS survey of the Hellenic part of northern Aegean Sea (GSA 22) in June-July 2020. The position of CTD stations sampled are also shown.

Maps related to the acoustic samples of the MEDIAS survey in Hellenic part of northern Aegean Sea (GSA 22) are presented below:
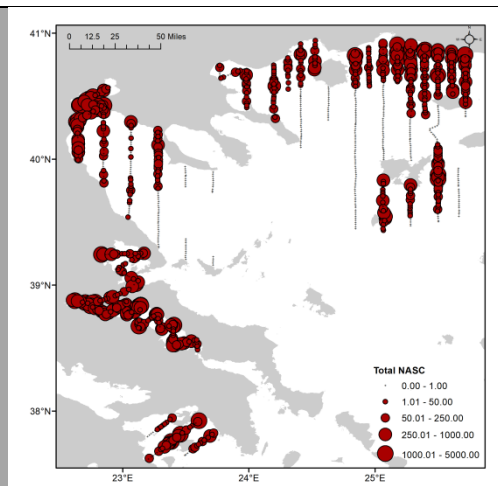
Fig 3. The distribution of the total fish NASC (m2/nm2) per EDSU of northern Aegean Sea (GSA 22) in June-July 2020.
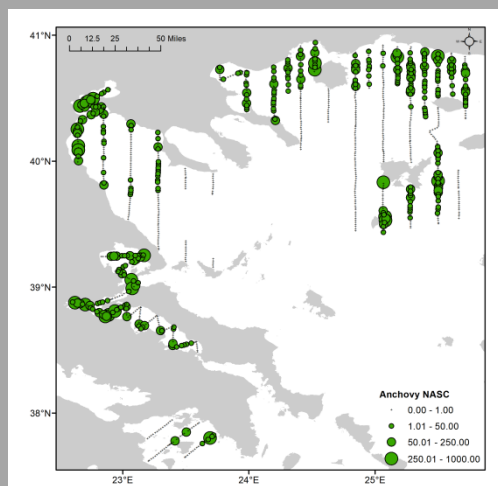

Fig 4. The distribution of the anchovy NASC (m2/nm2) per EDSU of northern Aegean Sea (GSA 22) in June-July 2020.
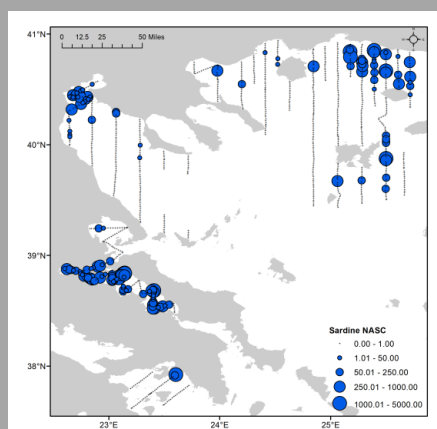

Fig 5. The distribution of the sardine NASC (m2/nm2) per EDSU in northern Aegean Sea (GSA 22) during June-July 2020.
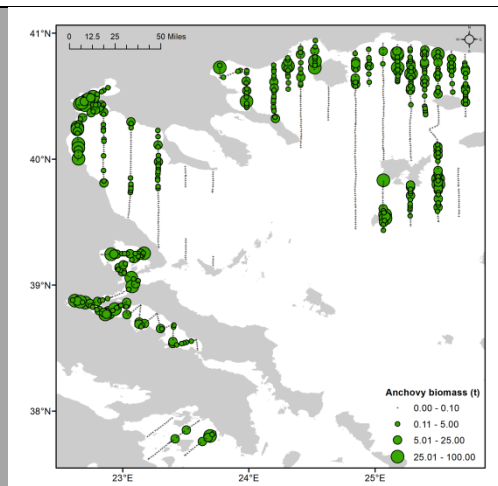
24

Fig 6. The distribution of the anchovy biomass (t) per EDSU in northern Aegean Sea (GSA 22) during June-July 2020.
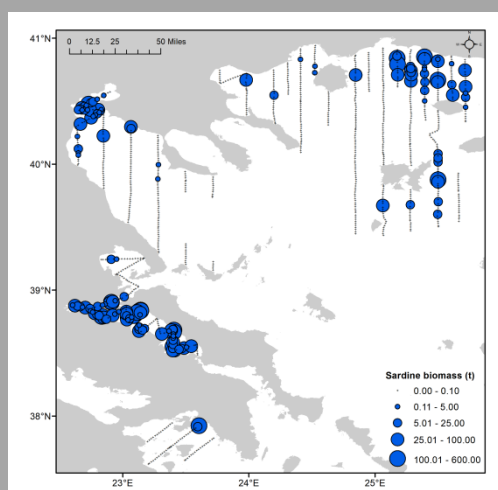

Fig 7. The distribution of the sardine biomass (t) per EDSU in northern Aegean Sea (GSA 22) during June-July 2020.
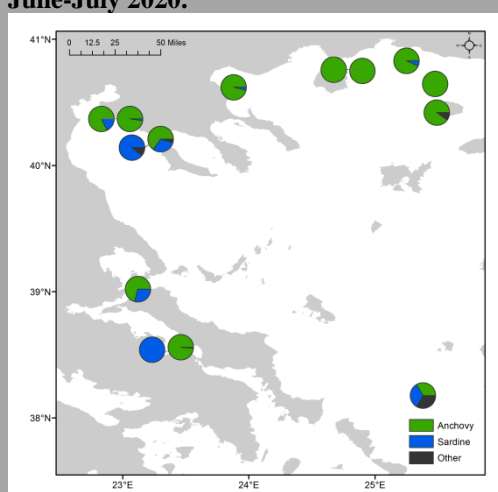

Fig 8. The catch compositions of the hauls (species kg/haul) weighted per hauling hour in northern Aegean Sea (GSA 22) during June-July 2020.

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

Member State shall provide a hyperlink to the meeting report from the body coordinating the survey (ICES, MEDITS coordination group, MEDIAS coordination group etc.). For non-international coordinated surveys, Member State shall refer to any status report (e.g. Cruise report).

The report for the MEDIAS survey for 2020 will be found at http://www.medias-project.eu/medias/website/ of the MEDIAS coordination group.

8.   List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators). Member State shall specify in which context the results are used (on routine basis), both on an international as well as on a national context.

Abundance indices for anchovy and sardine and any biological information derived from the MEDIAS survey in the Hellenic Seas are used for the stock assessment of anchovy and sardine stocks in Greek waters on routine basis both on an international (EU STECF and GFCM assessment groups) as well as on a national context.

Additional biological data are collected for the non target species, depending on the catch of mesopelagic hauls as well as temperature and salinity profiles in predetermined CTD stations, plankton sampling in predetermined stations and marine mammals observations. However, this information is not used for advice on international or national context.

Aegean Sea (GSA 22) MEDIAS survey

The following abundance estimates and indices are presented below and will be provided to the DCF for GSA 22 in 2020:

For anchovy and sardine:
•   Number of individuals/age
•   Biomass/age/Target species
•   Number of individuals/length class
•   Biomass/length class/Target species

Table 1. Biomass estimation of **anchovy** in Aegean Sea per length class based on the results of the acoustic survey in 2020.

Aegean Sea		
	Total biomass (t): 20 036.23	
Length class	No. of individuals	Biomass (t)
75	305 297	0.75
85	805 737	3.03
95	13 387 328	73.70
105	338 895 997	2 630.39
115	533 752 182	5 660.66
125	491 793 396	6 943.40
135	194 996 713	3 585.17
145	44 817 220	1 052.98
155	2 916 732	86.15
Sum	**1 621 670 603**	**20 036.23**

Table 2. Biomass estimation of **anchovy** in Aegean Sea per age class based on the results of the acoustic surveys in 2020.

	Aegean Sea	
Age	No. of individuals	Biomass (t)
0	8 700 034	56.64
1	1 201 470 591	13 441.58
2	404 426 484	6 391.83
3	7 073 493	146.19
Sum	**1 621 670 603**	**20 036.23**

Table 3. Biomass estimation of **sardine** in Aegean Sea per length class based on the results of the acoustic survey in 2020.

	Aegean Sea	
	Total biomass (t): 34 476.36	
Length class	No.of individuals	Biomass (t)
85	29 602 729	125.17
95	66 109 975	410.66
105	34 242 253	300.66
115	65 313 515	785.49
125	512 750 076	8 227.41
135	515 070 767	10 784.59
145	245 168 888	6 572.32
155	145 583 415	4 914.98
165	48 188 675	2 019.51
175	3 984 162	204.65
185	2 103 474	130.94
Sum	**1 668 117 928**	**34 476.36**

Table 4. Biomass estimation of **sardine** in Aegean Sea per age class based on the results of the acoustic surveys in 2020.

	Aegean Sea	
Age	No. of individuals	Biomass (t)
0	147 981 487	1053.28
1	538 592 440	10160.46
2	933 008 819	21391.32

		48 535 182	1871.30
3			
	Sum	**1 668 117 928**	**34 476.36**

For the non target species:

- Length–Weight relationships (where an adequate number of samples is available)

Table 5. Length-Weight relationships (TW (gr)- TL (mm)) for the main species in Aegean Sea.

Species	Aegean Sea
Anchovy (*Engraulis encrasicolus*)	TW = 9E-07*TL^3.4188
Sardine (*Sardina pilchardus*)	TW = 9E-07*TL^3.4589
Round sardine (*Sardinella aurita*)	TW = 6E-06*TL^3.0513
Mediterranean horse mackerel (*Trachurus mediterraneus*)	TW = 1E-05*TL^2.9278
Horse mackerel (Trachurus trachurus)	TW= 3E-06*TL^3.2005

Ecosystem indicators derived from acoustic surveys as described in the MEDIAS handbook (2019) upon request.

Ionian Sea (GSA 20) MEDIAS survey

No MEDIAS survey was carried out in the Hellenic part of Ionian Sea (GSA 20) in 2020, subsequently no abundance indices and estimates can be provided.

9. Extended comments (Tables 1G and 1H)
If the Member State has extended AR Comments, these can be placed under this section. If this is the case, a reference to this text box should be provided in the corresponding tables.

A deviation of the proposed plan regarding only the sampling period in Ionian Sea was due to the fact that the RV PHILIA was not operational in September 2020. Although actions were taken timely to use a commercial fishing vessel, equipped with a Simrad split beam ES-10 echosounder (compatible to the R/V PHILIA echosounder), at the end this was not visible as the specific vessel, which complied with echosounder specifications, did not comply with the COVID-19 safety requirements.

(max 450 words per survey)

SECTION 1: BIOLOGICAL DATA

Text Box 1G: List of research surveys at sea

MEDITS

General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which reseach surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.

1. Objectives of the survey

The main objective of **MEDITS** survey is to identify spatiotemporal variations in the abundance of demersal fish stocks.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The methods used in the MEDITS survey are described in the MEDITS manual:

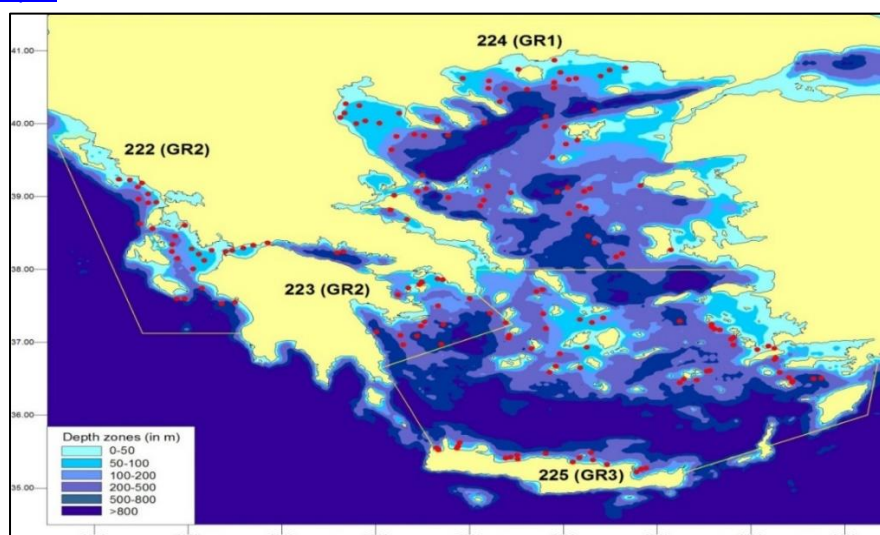http://www.sibm.it/MEDITS%202011/docs/Medits_Handbook_2017_version_9_5-60417r.pdf

Fig. 1G.2. Map of the sampling areas and sampling stations in the GSAs 20, 22, 23. Red spots represent the sampling stations.

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

Partcipating member states are Spain, France, Malta, Italy, Croatia Slovenia, Greece, Cyprus. Details for the vessels used for the surveys by member state are described in the MEDITS manual.

Medits Coordination Committee is in charge of planning the Survey.

4. **Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used**

Non applicable

5. Explain where thresholds apply

No thresholds   *(max 450 words per survey)*

6. **Graphical representation (map) showing the positions (locations) of the realized samples**.
Member State shall provide maps presenting the spatial distribution of the main sampling types obtained during the survey.

The MEDITS survey was realized in all Greek GSAs during 2020 without any deviation following the methodology described in the latest MEDITS manual.
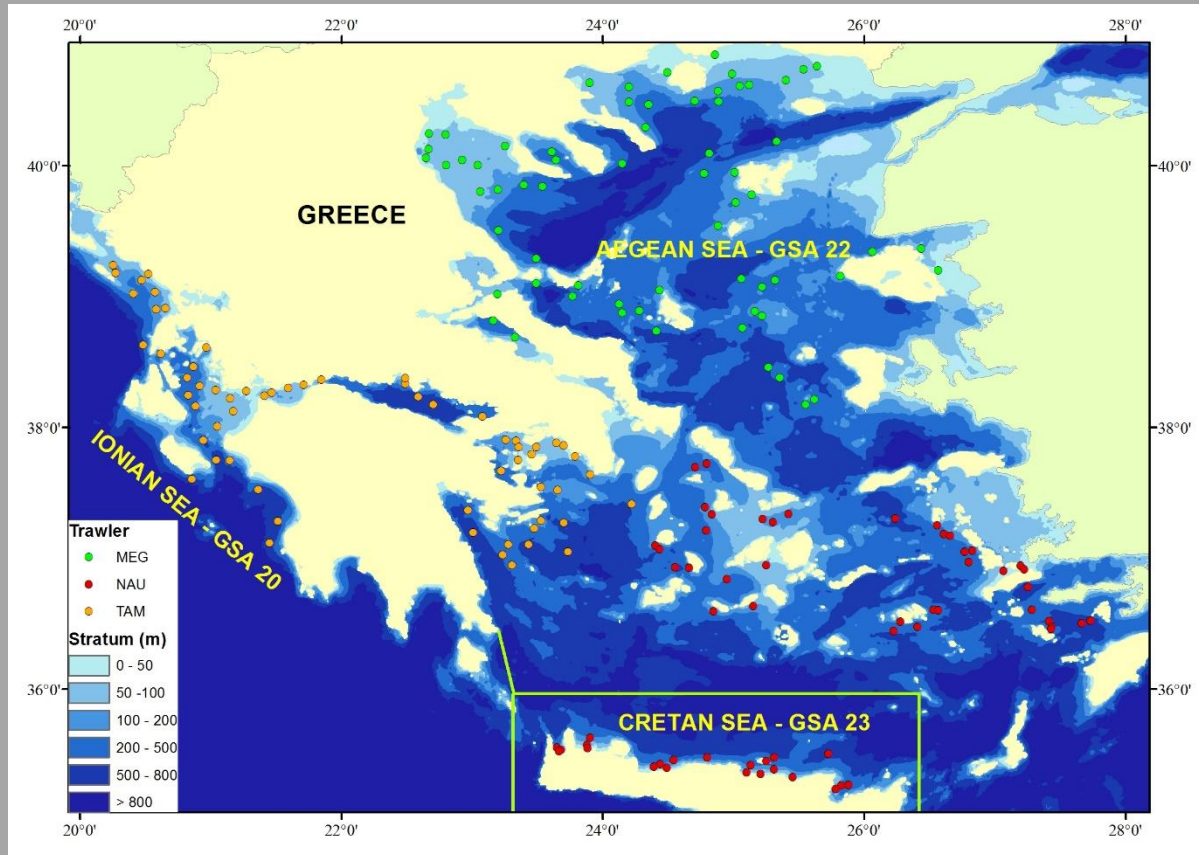

Fig. 1G.3. Sampling stations (spots) accomplished during the 2020 surveys in the GSAs 20, 22, 23. Three different vessels were used by three scientific teams in distinct areas. Different spot colors indicate the stations accomplished by each vessel and team.

7. **For internationally coordinated surveys, provide a link to the latest meeting report of the coordination group. Member State shall provide a hyperlink to the meeting report from the body coordinating the survey (ICES, MEDITS coordination group, MEDIAS coordination group etc.). For non-international coordinated surveys, Member State shall refer to any status report (e.g. Cruise report).**

The last meeting report of the MEDITS Coordination Committee for the 2018 MEDITS survey is available in the following link:

   https://www.sibm.it/MEDITS 2011/docs

 The annual coordination meeting of the MEDITS steering committee for 2019 MEDITS survey was not accomplished, due to the COVID-19 pandemic, while the coordination meeting of 2020 has been scheduled for May 2021.

8. **List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators).**
Member State shall specify in which context the results are used (on routine basis), both on an international as well as on a national context.

MEDITS data are commonly used for demersal species stock assessments (GFCM, STECF stock assessment groups) and also for indicators estimations used for the evaluation of demersal megafauna communities and of the

marine environment. Additionally, contribute to descriptive indicators mandatory for the Marine Strategy Framework Directive (MSFD) and in numerous European Research Projects, McS, PhDs and scientific publications in national and international level

9. **Extended comments (Tables 1G and 1H)**
If the Member State has extended AR Comments, these can be placed under this section. If this is the case, a reference to this text box should be provided in the corresponding tables.

The MEDITS surveys in the Greek GSAs (20, 22, 23) were accomplished according to the work plan with no deviations

(max 450 words per survey)

Text Box 2A: Fishing activity variables data collection strategy

General comment: This box fulfills paragraph 4 of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under Regulation (EU) No 1224/2009 or where data collected under Regulation (EU) No 1224/2009 are not at the right aggregation level for the intended scientific use.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the data collection of fishing activity variables of Member States.

1. Description of methodologies used to cross-validate the different sources of data.

Data on fishing capacity will be collected through the National Fleet Register for the following quantitative aspects: number of fishing boats, gross registered tonnage, engine power, age.

Data on fishing effort and landings, necessary for the estimation of variables listed in table 4 of Com.Dec1251/2016, will be collected through different sources because different requirements derives from EU Legislation according to vessel size.

Fishing vessels >12m are required to use satellite-based Vessel Monitoring System (VMS), and electronic report system (ERS*); fishing vessels between 10-12m are required to fill out paper logbooks, but there are no obligations to record catches below 50 kg; fishing vessels <10m are not obliged neither to fill out any type of logbook nor to present sales notes for catches below a certain threshold (50 kg).

Therefore, for vessels >12m the monitoring of fishing activity will be done through VMS for effort data and ERS for effort and landings data. However, for specific variables and fleet segments available, VMS and ERS data will be validated with data collected through sample survey using face to face interviews and structured questionnaires and data from biological sampling and observing trips. Specifically, cross check will be done for control data refers to variables Amount of landings, Days at sea, Number of trips, Value of landings per species, Average price per species are available for Demersal trawlers and/or Demersal seiners 12-18m, 18-24m and 24-40m, Purse seiners 12-18m, 18-24m and 24-40m, Vessels using hooks 12-18m, Vessels using drift and/or fixed netters 12-18m.

For vessels <12m, the monitoring of fishing activity will be realized through sample survey, using face to face interviews with structured questionnaires and data from biological sampling, as also proposed by MARE/2014/19. The data derived from biological samples provide productivity parameters, such as the CPUE that can be used both as a check-control for the information coming from the Control Regulation and those derived from sampling survey.

Specific procedures will be applied to verify the information obtained from the different sources, relating to the same variable (gears, days, catch and price for species), with the goal to identify and validate the final figure and get an exhaustive picture of the fishery for scientific purposes.

2. Description of methodologies used to estimate the value of landings.

The estimation of value of landings will be based on the principles of stratified random sampling as described under point 4. Recording of landings will be accomplished on a monthly basis.

3. Description of methodologies used to estimate the average price (it is recommended to use weighted averages, trip by trip)

Annual average prices will be estimated from weighted averages of monthly recordings. Estimates will be obtained using the commonly used stratified random sampling estimators as described under point 4.

4. Description of methodologies used to plan collection of the complementary data (sample plan methodology, type of data collected, frequency of collection etc)

A sampling scheme of stratified random sampling without replacement is chosen for this sample survey. The sample unit is the vessel and it is selected from the Greek vessel registry (target population coincides with frame population). The stratification of Greek fleet is based on the segments of Commission Implementing Decision (EU) 2016/1251 (gear type and vessel length). The gear classes "Hooks and lines" has been stratified on Hook A and Hook B. Hook A includes the gear types LHP, LLS and LTL, while Hook B includes the gear types LLD and LHM. Furthermore, strata concern the geographic regions of vessels for each segment. It is also important to notice that following Commission Decision 2010/93/EU (paragraph A.1.1), for each vessel for which economic variables are collected, the corresponding activity variables have also to be collected.

Following SGECA 09-02, the next clustered segments have been created:
- Segments similar to other segments
- Non-important segments with distinct characteristics

The number of inactive vessels will be estimated from the selected sample, as there is no a priori information on inactivity.

The sample size is determined taking into account the specific gears and the length category. The variable "days at sea" on previous year's estimation is selected from the activity variables as auxiliary variable to determine the sample size in each segment of the fleet, while the error (e) affecting the size of the segment sample is determined by its participation to the ranking of métiers in terms of landings, and effort (see Table 4C). The level of statistical significance for all segments set at 10% (z = 1.64). In each segment of the fleet, the sample size was calculated according to the equation (Dattalo, 2008):

$$n = \frac{n_0 \cdot N}{n_0 + (N - 1)}$$

where N the population for each segment and $n_0 = \frac{z^2 \cdot s^2}{e^2 \cdot \bar{x}}$,where s the standard deviation and $\bar{x}$ the average of auxiliary variable. The above formula can be adjusted when the total population is very small, and the n is relatively large (n/N>0.05) (finite population adjustment) (e.g. Thomson, 2002). Is such cases, the adjusted sample size (nadj) is calculated as:

$$n_{adj} = \frac{n}{1 + \frac{n}{N}}$$

After the determination of sample size in each fleet segment, the sample size by geographic strata shall be determined by the proportional allocation method:

$$n_g = \frac{n \cdot N_g}{N}$$

where n the sample size per fleet segments as derived from the adjusted sample size equation, N_g the number of vessels in the geographical layer per fleet segment and N the population size per fleet segment. Decimal values of sample size were rounded up to the nearest integer.

References:

Dattalo, P. 2008. Sample-Size Determination in Quantitative Social Work Research. Oxford University Press.

Sande, I.G. 1982. Imputation in surveys: Coping with reality. The American Statistician, 36:145-152.

Thompson, S.K. 2002. Sampling. Wiley New York.

* ERS data are coming from the Integrated Monitoring System of Fisheries Activities (OSPA) of the Ministry of Rural Development and Food.   *(max 900 words per Region)*

5. Deviations from Work Plan methodology used to cross-validate the different sources of data

List the deviations (if any) and explain the reasons for the deviations.

Validation of the>12 m part of the fleet has not yet taken place.

Actions to avoid deviations.
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

MS is planning to cross-validate data following the procedure that is described under point 1 until the end of 2021.

6. Deviations from Work Plan methodology used to estimate the value of landings.

List the deviations (if any) and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

No deviations exist

7. Deviations from Work Plan methodology used to estimate the average price.

List the deviations (if any) and explain the reasons for the deviations.
Actions to avoid deviations.
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

No deviations exist

8. Deviations from Work Plan methodology used to plan collection of the complementary data

List the deviations (if any) and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Response rates are low in some segments. This issue is mainly appeared in segments where ERS is in place (12-18m, 18-24m, 24-40m and beich seines 6-12m). The main reason for that is that fishermen who already provide data on ERS are more reluctant to provide similar data for the purpose of the complementary survey. MS will try to eliminate low response rates in the next reporting period.

(max 900 words per Region)

Text Box 3A: Population segments for collection of economic and social data for fisheries

General comment: This box fulfils paragraph 5 points (a) and (b) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraphs (1), (2) and (5) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Tables 5(A) and 6 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the fleet socio-economic data collection of Member States.

1. Description of methodologies used to choose the different sources of data

The majority of economic and social data for fisheries will be collected through sample survey, using face to face interviews and **structured questionnaires.**

However, for specific variables and fleet segments available **control data** will be validated with data collected through the sample survey. Specifically, control data refers to variables *Gross value of landings, Days at sea, Value of landings per species, Average price per species* and are available for Demersal trawlers and/or demersal seiners 6-12 m, 12-18 m, 18-24 m and 24-40 m, Purse seiners 12-18 m, 18-24 m and 24-40 m, Vessels using hooks 12-18 m, Vessels using drift and/or fixed netters 12-18 m.

The Economic variables *consumption of fixed capital* and *value of physical capital* will be estimated using data from **questionnaires** (*replacement value*) as well as data from the **National fleet register** (mean LOA and number of vessels per fleet segment) as proposed by the PIM methodology (EC study No. FISH/2005/03).

The Economic variables of the *fleet variable group* will be estimated using data from the **National fleet register.**

2. Description of methodologies used to choose the different types of data collection

As described in the ad hoc contract commitment No. SI2 725 694 Ref. Ares (2016)2440332 - 26/05/2016 "Methodologies for the socio-economic data described in EU MAP", the ideal survey method is the census. However, special characteristics of the national fleet and limitations, such as resources have to be considered in order to choose the appropriate sources of data. The Greek fleet consists of 14,123 vessels, the majority of which are smaller than 12 meters. As a result, control data, balance sheets or other financial records are generally not available. Therefore, the majority of the economic and social variables of the fleet will be collected using a **Probability Sample Survey.**

As already mentioned, for specific variables and fleet segments control data are also available (**Census data**) and will be validated using collected data. Therefore the type of data collection for these specific fleet segments and variables maybe census or probability sample survey depending on the outcome of the validation procedure.

Census will be used for the variables of the *fleet variable* group, using data from the National fleet register. **Census** will be also applied on the economic variables *consumption of fixed capital* and *value of physical capital,* since they derive from PIM.

Finally, **Indirect survey** will be used for the economic variable *Value of unpaid labour* since it derives from other surveyed data.

3. Description of methodologies used to choose sampling frame and allocation scheme

Following Commission Decision 2010/93/EU (paragraph A.1.1), for each vessel for which economic variables are collected, the corresponding activity variables have also to be collected. Therefore, the sample design for the collection of activity variables coincides with the design for the collection of economic variables. See Textbox 2A for more details on the sampling frame and allocation scheme.

4. Description of methodologies used for estimation procedures

Economic variables are estimated according to the a d hoc contract commitment No. SI2 725 694 Ref. Ares(2016)2440332 - 26/05/2016 "Methodologies for the socio-economic data described in EU MAP".

The Greek management system does not involve quotas or other fishing rights. Therefore *Income from leasing out quota or other fishing rights, Value of quotas or other fishing right* and *Lease/rental payments for quota or other fishing rights* are expected to be zero.

In the case of Greece, fishing vessels are only used for fishing, since other activities require fishing authorizations and the fishing vessels do not fill the requirements for such permits. Therefore, the variable *other income* includes insurance payments for damage/loss of gear/vessel and possibly from leisure fishery.

Personnel costs will be obtained directly from survey. However, in the case a crew share system is used, personnel costs will be calculated as a percentage of total revenues or as a percentage of revenues minus costs.

Value of unpaid labour will be estimated using the FTE method proposed in the Ad hoc contract.

Consumption of fixed capital and *Value of physical capital* will be estimated using the PIM methodology (EC study No. FISH/2005/03). The assumptions of PIM methodology are described in Methodology report available at http://www.agreri.gr/sites/default/files/projects/Methodology%20Report.pdf

Finally, it should be mentioned that for all variables estimated through a probability sample survey, the Horvitz-Thompson estimator will be used to estimate total values.

The estimation procedures of the social variables is discussed in ***Pilot study 3. Data on employment by education level and nationality.***

5. Description of methodologies used on data quality

The data quality evaluation framework is designed and operates to ensure the completeness, consistency and comparability of collected data. More specifically, the evaluation includes the identification and substituting of missing values, outliers and extreme values in data.

Furthermore, bias and variability indicators will be used as quality indicators. Particularly, the bias indicators provided will be Coverage Rates and Response Rates. Coefficient variation (CV) is used as variability indicator. It should be noted that the target and the frame population are the same and therefore there is no coverage error.

In order to minimize the non-response error per statistical unit (vessel), an extra random sample of corresponded stratum is selected. Moreover, response rate will be calculated for each variable (question) of sample survey.

For key economic variables such *as energy consumption* and *energy costs*, imputation techniques will be used.

(max 900 words per Region)

6. Deviations from Work Plan methodology for selection of data source

List the deviations (if any) from the methodology used to select data source compared to what was planned in

the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

No deviations exist

7. Deviations from Work Plan methodology to choose type of data collection

List the deviations (if any) from the methodologies to choose type of data collecton scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

No deviations exist

8. Deviations from Work Plan methodology regarding sampling frame and allocation scheme

List the deviations (if any) from the methodologies used regarding sampling frame and allocation scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There are no deviations from the NWP methodology, even though the values in column "Achieved Sample no/Planned sample no." are not always close to one (either from above or from below). The reason is that according to the Greek NWP, the actual planned sample rate is yearly updated. Consequently, the planned sample rate may differ from year to year, because the sample size is reconsidered every year, based on the size of the population and the previous year variance of each stratum. This approach is also recommended by STECF 17-11, Quality Assurance for DCF data and by the Quality Guidelines for the DCf (Moura, 2016, see pages 35-38) (see also section 4 of Textbox 2A).

For the above reason, the actual planned sample rate has been updated with respect to the one reported in the WP and consequently, the response rate reported in Table 3A is different from the values reported in column "Achieved Sample no/Planned sample no."

9. Deviations from Work Plan methodology used for estimation procedures

List the deviations (if any) from the methodologies used for estimation procedures compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

No deviations exist

10. Quality assurance

10.1 Sound methodology

Briefly describe if the data collection follow methodologies, guidelines and best practices agreed in expert groups and whether methodologies are documented and are made publicly available.

The data collection scheme follows methodologies, guidelines and best practices agreed in expert groups (in particularly PGECON 2017 and 2018, SGECA09-02, Social and new economic variables workshop PG ECON as well as Moura, 2016).

The majority of the economic data was collected through sample survey as already discussed in previous paragraphs. Bias and variability indicators were used as quality indicators. Particularly, the bias indicators provided were the coverage rates (planned and achieved) and response rates, while the variability indicator provided was the CV. For key economic variables such as energy consumption and energy costs, imputation techniques were used.

It should be noted that the target and the frame population are the same and therefore there is no coverage error. As far as measurement errors are concerned, the submitted data were evaluated thoroughly using several indicators. Furthermore, data collectors were properly trained in a specially targeted workshop and written guidelines regarding the collection process was provided to them.

MS have already published an updated version of the methodology (and quality) report https://www.agreri.gr/sites/default/files/projects/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203%20%281%29.pdf).

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3A.
For additional information, briefly describe how raw data inputs, intermediate results and outputs are regularly assessed and validated and how errors are identified, documented and dealt with.

Response rate and Achieved sample rate are provided in Table 3A.

MS source data, intermediate results and statistical outputs are regularly assessed and validated, using data quality indicators and benchmark tables. In case, of extreme values and outliers, internal communication is implemented with data collectors to correct possible typing errors.

Sampling and non-sampling errors are measured and systematically documented according to the European standards. Morever, internal procedures and guidelines to measure and reduce errors are in place such as:

- Identification of the main sources of error;

- Quantification of sampling errors;

- Identification and evaluation of main non-sampling error sources in statistical processes;

- Special attention to outliers;

Quality reporting on accuracy is guided by EU/regional recommendations and methods. Moreover, tools for preventing and reducing sampling and non-sampling errors are in place (See the latest version of Methodology report, available at (https://www.agreri.gr/sites/default/files/projects/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203%20%281%29.pdf)

10.3. Accessibility and Clarity

Indicate with Yes or No

Are methodological documents publicly available? **YES**

Are data stored in databases? **YES**

Where can methodological and other documentation be found?
Provide the web link, if documentation is publicly available

https://www.agreri.gr/sites/default/files/projects/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203%20%281%29.pdf

 (max 1000 words)

Pilot Study 3: Data on employment by education level and nationality

General comment: This box fulfills paragraph 5 point (b) and paragraph 6 point (b) of Chapter III of the Annex Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 and Article 4 paragraph (3) point (c) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Table 6 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study (including deviations from planned and justifications as to why if this was not the case).

1. Aim of pilot study

The aim of the pilot study is to collect data required to estimate the social variables of Table 6 of the multi-annual Union programme, namely *Employment by gender, FTE by gender, Unpaid labour by gender, Employment by age, Employment by education level, Employment by nationality, Employment by employment status and FTE national.* The pilot study were implemented in 2018 and the next study regarding Data on employment by education level and nationality will take place after 3 years, in 2021, following the multi-annual Union programme. The study focus on social charecteristics of the engaged crew and unpaid labour of the vessels. Social characteristics involve the gender, the age, the education level and nationality of all crew members and unpaid workers of the vessel. These data will allow the estimation of the social variables of Table 6. During the pilot study of year 2018, the data were collected according to the plan sample rate, following the economic data collection scheme.

2. Duration of pilot study

As in the case of the study held in 2018, the social variables will be collected from the same vessels as the economic data during that year and the duration of the study will be one year.

3. Methodology and expected outcomes of pilot study

The study for the social variables will be conducted at national level. All social variables, namely *Employment by gender, FTE by gender, Unpaid labour by gender, Employment by age, Employment by education level, Employment by nationality, Employment by employment status and FTE national* will be estimated based on data collected through sample survey using **questionnaires,** since alternative data sources for these variables are not available. The social variables will be collected from the same vessels as the economic data during that reference year (2021).

Probability Sample Survey will be used for the estimation of the following variables:

- o *Employment by gender,*
- o *Unpaid labour by gender,*
- o *Employment by age,*
- o *Employment by education level,*
- o *Employment by nationality*
- o *Employment by employment status,*

Indirect survey will be used for the social variables *FTE by gender* and *FTE national,* since the derive from other surveyed data as suggested in the Ad hoc contract commitment No. SI2 725 694 Ref. Ares(2016)2440332 - 26/05/2016 "Methodologies for the socio-economic data described in EU MAP".

The social variables will be estimated according to the instructions that have been provided by the PGECON workshop in Athens in 2017.

As far as the *FTE National* variable is concerned it will be estimated according to the study "Calculation of labour including full-time equivalent (FTE) in fisheries"(FISH/2005/14, 'LEI WAGENINGENUR). Specifically, a national threshold representing the total number of hours worked, on a standard and yearly basis, by a full-time worker in the fishery sector is first defined. FTE national is then calculated using this threshold. If the annual working hours per crew member exceed that threshold, the FTE equals 1 per crew member (annual working hours>national threshold then FTE national =1). If the annual working hours per crew member is less than the threshold then the FTE equals the ratio between the hours worked and the threshold (annual working hours<national threshold then FTE national = annual working hours/national threshold). Iit should be noted that for Greece the threshold is defined at 1.750 hours, according to the greek legislation (Official Goverment Gazette No 1181 9/June/2011).

The expected outcome of the pilot study of 2018 was to identify the appropriate methodology to collect and estimate the social variables included in Table 6 of the multi-annual union programme. Specifically, the socio-economic questionnaire has been updated and reassessed, as well as the instructions for the data collectors. In addtion, the database has been updated to include the social variables and the estimation procedures were validated. Another important outcome of the pilot study were the identification of difficulties and problems that maybe encountered during the collection of the social variables and their possible solutions. The pilot study fully achieved to meet all of the aforementioned targets. In the 2021 survey, the expected outcome is to study the evolution of the social variables in this three-years period and to understand possible trends beneath it.

For more information on the outcome of the pilot study, see: Scientific, Technical and Economic Committee for Fisheries (STECF) – Social data in the EU fisheries sector (STECF-19-03). Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-76-09514-9, doi:10.2760/638363, JRC117517

(max 900 words)

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

According to the WP social data collection is implemented every three years parallel with the economic data collection. Indeed, MS gathered social data using the same data collection scheme with the economic survey and therefore, no deviations exist (see also Table 3A).

Consequently, social data collection also follows the same quality assurance framework with the economic data collection scheme (see point 10, in Textbox 3A and the Methodology report* for more details). The social data collection scheme has been also presented in the special Social and new economic variables workshop PGECON, that took place in Athens, between 19-22 November 2018.

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

According to the EU-MAP, MS should collect social data in a triannual basis, and the first reference year for the collection of these variables was 2017. Social data collection implemented successfully and without deviations. MS is confident that it will successfully collect social data for the next social data call.

* available at:
https://www.agreri.gr/sites/default/files/projects/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203%20%281%29.pdf

(max 900 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

Text Box 3B: Population segments for collection of economic and social data for aquaculture

General comment: This box fulfills paragraph 6 points (a) and (b) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Tables 6 and 7 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the socio-economic data collection for aquaculture of Member States.

1. Description of methodologies used to choose the different sources of data

The main segments of the Hellenic aquaculture industry are: (a) sea bass and sea bream culture, (b) other marine fish culture, (c) mussel long-line culture, (d) trout culture, (e) eel culture, (f) extensive farming - estuaries & lagoons.

At present, aquaculture (in fact mostly marine culture), is considered a major industry in Greece, not only because of its impressive volume production performance in but also because of its high importance in socio-economic terms. Estimates show that this figure could reach 10,000, taking into account indirect industry-related activities

It should be noted that the majority of aquaculture units in Greece, are not financially autonomous entities but they belong (in most cases by lease) to larger firms. While aquaculture units can provide information about production volumes and certain cost values, other variables can be acquired only by the financial department of the company that holds the lease of the units. On the other hand, the prerequisite segmented per species or technique variables,generally is not available by the companies accounting offices or the representatives.

Basic source for the collection of economic data during 2020-21 will be the Integrated Monitoring System of Fisheries Activities (OSPA) and a survey will be used for the confirmation and supplementation of the collected aquaculture data.The majority of the required economic data can be derived from the processing of the balance sheets and financial statements of the companies, however, the socio-economic data needed (employment by gender etc.) will be provided by on site visits, interviews, financial records and balance sheets.

2. Description of methodologies used to choose the different types of data collection

The first stage of the data collection methodology shall consist of the mailing and completion of a questionnaire based on the previous years' data collection experience and updated with any new prerequisite values. Each company is given a period of 60 days to gather the requested questionnaire data and provide the feedback.

The questionnaire will include topics of both social and economic data, requesting employment, production and revenue values along with the company's cost structure and a short enumeration of the company's main problems and predictions.

The second stage will include onsite visits to the companies that completed the questionnaire along with a data processing of published balance sheets and financial statements.

The questionnaire will include the following 4 topics:

(1) cost and profit: value of total sales, personnel costs, energy related costs, value of purchased raw material(fry) and other material necessary for the production, production costs and value of the final product, capital costs, special costs, investments, and debt.

(2) Aquaculture techniques: freshwater, marine fish, cold-water or warm water marine fish, shellfish, Cages, Land based farms, Hatcheries and Nurseries, Rafts or Long line Mussel production, Extensive farming in estuaries and lagoons

(3) The socio-economic criteria of the sector are attributed to: employment per sector, gender employment statistics, number and location of enterprises, and the problems of the enterprises.

(4) Environmental data pilot study

The collected data from all sources will be uploaded regularly on the aquaculture sector database (OSPA) in order to update the topic values and the list of companies to be interviewed.

As for the aqua economic prerequisite variables, previous surveys showed that companies provided only the sales values of fry and final product, i.e. the categories that demonstrated sales. The in-between variables remained with zero value since the companies only keep records of the variables that showed sales during the year, and not the ones that were destined for own consumption.

3. Description of methodologies used to choose sampling frame and allocation scheme

The questionnaires will be sent to all the operating aquaculture enterprises. The processing of balance sheets will cover more than 85% of the total number of SA and LTD enterprises obliged to publish their financial statements.

Due to the fact that those companies hold more than 85% of the aquaculture sector's total sales, the census method will be applied to most of their economic variables.

4. Description of methodologies used for estimation procedures

Based on previous surveys data collection experience, few of the companies (specifically the large ones), provided values segmented by aquaculture techniques and species.Companies generally are reluctant to apply segments by species or techniques to the provided economic and social data. Only a few of those operating under the International Financial Reporting Standards (IFRS) are able to provide the extra information, even about production cost structure. Due to the voluntary For those variables that need further segmentation, both social and economic, a non-probability sample survey will be applied based on the information provided by the large enterprises that cover adequately the species and the techniques.

5. Description of methodologies used on data quality

The collected data provided by financial records and questionnaires as well as segmented values provided by non-probability sample survey, will be supplemented with and cross checked by data from the following sources: (a) Prefectural Chambers of Commerce, Industry and Trade (e.g. brand name, location, VAT number, phone and fax numbers) (b) Prefectural Directorates of Fisheries and Veterinary Services, as well as the National Food Control Agency (EFET) and the Hellenic Ministry of Rural Development and Food (e.g. purchase of raw material, production per species, total sales in quantity and value, employment, functioning regulations), (c) Integrated Monitoring System of Fisheries Activities (OSPA) and (d) business and professional online data bases (e.g. location, phones, projected investments, sales, general economic data).

(max 1000 words)

6. Deviations from Work Plan methodology for selection of data source

List the deviations (if any) from the methodology used to select data source compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

7. Deviations from Work Plan methodology to choose type of data collection

List the deviations (if any) from the methodologies to choose type of data collecton scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

8. Deviations from Work Plan methodology regarding sampling frame and allocation scheme

List the deviations (if any) from the methodologies used regarding sampling frame and allocation scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

9. Deviations from Work Plan methodology used for estimation procedures

List the deviations (if any) from the methodologies used for estimation procedures compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

10. Quality assurance

10.1 Sound methodology

Briefly describe if the data collection follow methodologies, guidelines and best practices agreed in expert groups and whether methodologies are documented and are made publicly available.

The survey was carried out according to the methodologies described in Greece's "Work Plan for data collection in the fisheries and aquaculture sectors 2020-2021". The guidelines and practices agreed upon by program's partners and experts, were followed and monitored by monthly work reports and regular work meetings to guarantee proper implementaion of the survey schedule.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3B.

For additional information, briefly describe how raw data inputs, intermediate results and outputs are regularly assessed and validated and how errors are identified, documented and dealt with.

Raw data inputs and intermediate results are compared to corresponding previous year data in each category during their entry in the data base and in case of significant differences between the two years or data inconsistencies, an effort is applied for confirmation of the data validity. Also, data is cross checked and confirmed by data from Integrated Monitoring System of Fisheries Activities (OSPA).

10.3. Accessibility and Clarity

Indicate with Yes or No

Are methodological documents publicly available?   **YES**

Are data stored in databases?   **YES**

Data is stored first in spreadsheets for processing and then uploaded on a data base.

Where can methodological and other documentation be found?
Provide the web link, if documentation is publicly available

The methodological documentation can be found in the pdf file ***"Methodology and Data Quality Assurance Framework for Socio-Economic Variables on Aquaculture and Fisheries Processing"*** which has been uploaded and is available on the web site of the Ministry of Rural Development and Food, in the data collection section. The link is

 http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/Data_Quality_Aquacalture.pdf

also in the web site of the Fisheries Research Institute in the data collection section under the link:

 https://inale.gr/national-fishing-data-collection-program_el/

 (max 1000 words)

Pilot Study 4: Environmental data on aquaculture

General comment: This box fulfills paragraph 6 point (c) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 and Article 4 paragraph (3) point (d) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Table 8 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study (including deviations from planned and justifications as to why if this was not the case).

1. Aim of pilot study

In Greece, data (mortality, antibiotics, etc.) may be recorded at an aquaculture unit or administrative level, but are not collected at a national level. Aquaculture units are required to keep annual logbooks, which are inspected (not collected) by the national authorities (on-site visits). The results of the pilot study showed that companies were reluctant to provide medicine and treatment data while 50% of the sample (20% of the sector's largest companies) provided mortality data. Our concern, based on the results of the previous pilot study, was that inclusion of mortality and medicine and treatment data within the survey would have an effect on the response rates. However, mortality and medicine and treatment data will be enquired and included in the questinnaire of survey and more effort will be exerted to continue requesting persistantly these data.

2. Duration of pilot study

A new pilot study will be implemented during 2020-21 targeting the mortality data environmental data on aquacalture.

3. Methodology and expected outcomes of pilot study

For the 2 years duration, as it is mentioned in Text Box 3B, paragraph 2, a 4th topic regarding the mortality medicine and treatment data will be inserted in the questionnaire, which will be sent to all companies in the sector. According to the results arising from the survey, we reserve the right to change the methodology and to redefine our goals and aspects.

(max 900 words)

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

The results of the pilot study so far showed that all companies continued to be reluctant to provide antibiotics data (zero responses) while almost half provided mortality data. However, a stratified sampling method was used, with a subpopulation division (subgroups-strata) based on relevant characteristics like farming techniques, aquaculture species, location of units and connection of companies supplied with fish fry from the same hatcheries and nurseries facilities. This division allowed for more precise conclusions, by ensuring that every subgroup is accurately represented in the sample based on the overall proportions of the population (number of farms combined with the technique), leading to more accurate calculation of appropriate farms sample from each subgroup, using the Non-Probability Sample survey.

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

Based on the results of the pilot study, only mortalities data can be incorporated into regular sampling since it was the only type of data collected during the pilot study.

The environmental data were collected with the non-Probability sample method (with larger sample- more accurate and increased validity) and the questionnaires were crosschecked and supplemented with all the possible sources according to the following steps:

1. As a 4th topic regarding the mortality and antibiotics data were inserted in the questionnaire, mortalities data were classified (diseases, weather conditions, air and sea predators and natural causes), using the diseases classification for antibiotics usage indication.
2. The next step included crosscheck and complementation of the environmental data from sources such as published data on the internet, survey data carried out by universities, institutes and organizations and filed reports to national authoritites regarding compensation claims due to production loss

Application of non probability method on a 50% sample with mortality data gathered for all aquaculture techniques of all species recorded for the National Program.

(max 900 words)

Text Box 3C: Population segments for collection of economic and social data for the processing industry

General comment: This box fulfils footnote 6 of paragraph 1.1(d) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Table 10 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the socio-economic data collection for aquaculture of Member States.

1. Description of methodologies used to choose the different sources of data

The Greek fisheries processing industry sector includes activities like freezing, processing (filleting, salting, drying, smoking, marinating, cooking, canning) of fish, and the de-shelling of mussels.

In Greece the fisheries processing industry is an important contributor to the blue economy, connected to the other major sectors of fishing and aquaculture, employing almost 2.000 employees.

The majority of the required economic data can be derived from the published annual balance sheets and the yearly financial statements of the companies, However, only a few, operating under the International Financial Reporting Standards (IFRS), provide the additional social data and the detailed production cost structure while smaller companies provide little or no data for values such as assets and capital depreciation.

An additional problem that has to be addressed is the complicated distinction between equivalent parallel activities, a case common in Country's fisheries processing sector.

It also should be noted that there is a number of companies with processing activity that is not their main one, considering the added value or the employed personnel attributed to that activity but nonetheless is important for their economic operation.

Questionnaires completed by companies combined with onsite visits and interviews provide the remaining information needed.

The collected data provided by financial records and questionnaires will be supplemented and cross checked by data from the following sources: (a) Prefectural Chambers of Commerce, Industry and Trade (e.g. brand name, location, VAT number, phone and fax numbers) (b) Prefectural Directorates of Fisheries and Veterinary Services, as well as the National Food Control Agency (EFET) and the Hellenic Ministry of Rural Development and Food (e.g. purchase of raw material, production per species, total sales in quantity and value, employment, functioning regulations) and (c) businessand professional online data bases (e.g. location, phones, projected investments, sales, general economic data).

2. Description of methodologies used to choose the different types of data collection

The first stage of the data collection methodology shall consist of the mailing and completion of a questionnaire based on the previous years' data collection experience and updated with any new prerequisite values.

The questionnaire will include topics of both social and economic data, requesting employment, production and revenue values along with the company's cost structure and a short enumeration of the company's main problems and predictions.

The second stage will include onsite visits to the companies that completed the questionnaire along with a data processing of published balance sheets and financial statements.

The questionnaire will include the following topics: (1) value of total sales per processed products, (2) personnel costs, (3) energy related costs, (4) quantity and value of purchased processed raw material and other

material necessary for the production, (5) production costs and value of the final product, (6) capital costs, (7) special costs, (8) investments, and (9) debt. The socio-economic criteria of the sector are attributed to: (1) employment per sector, (2) employment statistics including gender, age, education level and nationality, (3) number and location of enterprises, and (4) the problems of the enterprises

The collected data from both sources will be uploaded regularly on the processing industry database in order to update the topic values and the list of companies to be interviewed.

3. Description of methodologies used to choose sampling frame and allocation scheme

The data collection scheme that will be used for the majority of values will be the census. The questionnaire will be sent to all the listed companies and the onsite interviews will be scheduled as follows: to all enterprises with ≥ 11 employers and to 75% of the enterprises with ≤ 10 employers (stratified random sampling strategy) in the sector.

During the surveys, the enterprises that received the aforementioned questionnaire, were generally positive in providing the required data. The completed questionnaires produced a significantly high percentage of sample (>90 %), thus ensuring reliability of the estimations and conclusions.

The estimated number of enterprises not responding and/or fail to obtain sufficient data from all other available sources is very small (less than10% according to previous studies).

4. Description of methodologies used for estimation procedures

As it was mentioned above, the census method will be used for the majority of values. Therefore, the estimation procedure will be applied for certain values (e.g. energy cost and unpaid labor) due to inadequate input or company's reluctance to answer,using the non probability sample survey method.

5. Description of methodologies used on data quality

Provided the main methodology for the data collection is census, estimation is limited to only a few variables.

All variables gathered from different sources will be compared and cross-checked for their credibility. The questionnaire data, especially for the small companies with no published balance sheets, will be crosschecked with the corresponding Prefectural National Authorities records to verify volumes and values as well as with previous years' surveys.

(max 1000 words)

6. Deviations from Work Plan methodology for selection of data source
List the deviations (if any) from the methodology used to select data source compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

7. Deviations from Work Plan methodology to choose type of data collection

List the deviations (if any) from the methodologies to choose type of data collecton scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

8. Deviations from Work Plan methodology regarding sampling frame and allocation scheme

List the deviations (if any) from the methodologies used regarding sampling frame and allocation scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

9. Deviations from Work Plan methodology used for estimation procedures

List the deviations (if any) from the methodologies used for estimation procedures compared to what was planned in the Work Plan, and explain the reasons for the deviations.
Actions to avoid deviations
Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

There were no deviations

10. Quality assurance

10.1 Sound methodology

Briefly describe if the data collection follow methodologies, guidelines and best practices agreed in expert groups and whether methodologies are documented and are made publicly available.

The survey was carried out according to the methodologies described in Greece's "Work Plan for data collection in the fisheries and aquaculture sectors 2020-2021". The guidelines and practices agreed upon by program's partners and experts, were followed and monitored by monthly work reports and regular work meetings to guarantee proper implementaion of the survey schedule.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3C.

For additional information, briefly describe how raw data inputs, intermediate results and outputs are regularly assessed and validated and how errors are identified, documented and dealt with.

Raw data inputs and intermediate results are compared to corresponding previous year data in each category during their entry in the data base and in case of significant differences between the two years or data inconsistencies, an effort is applied for confirmation of the data validity.

10.3. Accessibility and Clarity

Indicate with Yes or No:

Are methodological documents publicly available? **YES**

Are data stored in databases? **YES**

Data is stored first in spreadsheets for processing and then uploaded on a data base

Where can methodological and other documentation be found?
Provide the web link, if documentation is publicly available.

The methodological documentation can be found in the pdf file *"Methodology and Data Quality Assurance Framework for Socio-Economic Variables on Aquaculture and Fisheries Processing"* which has been uploaded and is available on the web site of the Ministry of Rural Development and Food, in the data collection section. The link is

 http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/Data_Quality_Aquacalture.pdf

also in the web site of the Fisheries Research Institute in the data collection section under the link:

 https://inale.gr/national-fishing-data-collection-program_el/

(max 1000 words)

Text Box 4A: Sampling plan description for biological data

General comment: This box fulfills Article 3, Article 4 paragraph (4) and Article 8 of the Implementing Decision (EU) 2016/1701 on the format of the WP and forms the basis for the fulfilment of paragraph 2 point (a)(i) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. This Table refers to data to be collected under Tables 1(A), 1(B) and 1(C) of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the deviations from the planned sampling of Member States.

1. Description of the sampling plan according to Article 5 paragraph (3) of the Implementing Decision (EU) 2016/1701 on the format of the WP.

Mediterranean Sea

The Greek fishing fleet consists of numerous vessels (the largest in the EU) of low tonnage and power. According to the National Fleet Register (31/12/2018), the fleet consists of 14,123 fishing vessels with a total tonnage of 66,748.11 GT, total power of 395,170 KW and average age of 28 years. The great majority (~95%) of the fleet are small vessels (average length 7.5 m) exploiting the extensive coastline of the mainland and of the numerous Greek islands (15,000 km, covering more than 6,000 islands and islets), targeting coastal fishing stocks. Greek fishing activities cover three GSAs: (a) Aegean Sea (GSA 22), (b) Ionian Sea (GSA 20) and (c) Cretan Sea (GSA 23).

Based on the type of fishing activity, the Greek fishery is categorized as follows:

a. Demersal trawl fishery, consisting of 250 vessels, corresponding to 1.77% of the Greek fishing fleet, while their production represents ~25% of the total fisheries production. It is a mixed fishery targeting various demersal species and is only one métier (**OTB_DEF_>=40_0_0**).
b. Pelagic (purse seine) fishery consisting of 239 vessels (1.69% of the Greek fishing fleet). It primarily targets small pelagics (anchovy and sardine) and occasionally mackerels. It is only one métier (**PS_SPF_>=14_0_0**).
c. Coastal fishery, which is the largest part (96.54%) of the Greek fishing fleet (13,634 vessels) consisting of inshore vessels fishing with static gears in the coastal zone. It has a multi-gear and multi-species character. A total of 6 métiers has been selected for sampling: Set gillnet for demersal fish (**GNS_DEF_>=16_0_0**), Set trammel net for demersal fish (**GTR_DEF_>=16_0_0**), Set long lines for demersal fish (**LLS_DEF_0_0_0**), Drifting long lines for large pelagic fish (**LLD_LPF_0_0_0**), Pots and traps for demersal species (**FPO_DEF_0_0_0**) and Beach and boat seine for demersal species (**SB_SV_DEF_0_0_0**).

The sampling scheme for the volume and length frequency of the catch fractions (landings, discards and PET bycatch) is based on the principles of stratified random sampling, employing the métier (level 6) as the basic stratum. The selection of métiers was based on the ranking system described in Commission Decision 2010/93/EU. Ranking was based on average landings, value and effort over the years 2016 & 2018, resulting in the above-described eight métiers. The aforementioned GSAs are divided in 12 sub-areas, which constitute the next level of stratification within each métier. The Primary Sampling Unit (PSU) is the fishing trip. The total number of trips to be sampled is defined proportionally to the nominal effort (number of days at sea) for each métier during the reference year. The target population per GSA is the number of trips of all commercial vessels in the reference year (Table 4D), while the frame population refers to the number of trips of the commercial vessels that fish in the selected métiers (Table 4C). PSU selection by métier per GSA is performed

randomly, with the option to replace the selected trip in case that the vessel owner refuses cooperation (Table 4B). Sampling is performed by observers at sea and on shore (8 métiers X 12 sub-areas), on a quarterly basis, taking into account the temporal distribution of the effort within each métier and sub-area. For inshore vessels, 1/3 of the sampling trips is performed at-sea and the 2/3 on-shore. For the purse-seine fishery, the sampling trips are divided equally at sea and on shore, while for trawlers and beach-seines, they are all performed at sea. The number of trips that are sampled by métier and GSA, as well as all the information for the sampling plan is indicated in Table 4A.

The list of species for which volume and length frequency data are collected is defined by the Tables 1A, 1C of the multi-annual Union Programme as well as by the GFCM-DCRF Annexes A.1, A.2, A.3. For all the species included in the aforementioned Tables and Annexes, the volume (Total weight and Total number per haul/trip) and the length frequency (a random sample of 50-100 individuals, depending on availability) of all catch fractions (landings, discards, unwanted catches) are recorded.

For a subset of species additional biological data, such as individual weight, age, sex and maturity are collected. These species are selected based on specific thresholds (i.e. stocks that their landings are above 200 t or the share of the country in the EU Mediterranean landings is above 10%). Data collection of additional biological data is based on stratified random sampling, with GSA being the basic stratum, while "fishing trip" is the PSU. Stratification by metier is not taken into account, since the aim is to derive biological information on the stock level, irrespectively of the fishing gear. The sampled stocks are listed on Table 1A of the NWP and the sampling plan for the biological variables (Table 1B), complies with the agreement no.2 of RCM MED&BS-LP 2016. The sampling intensity by species is presented in Table 1C and is currently based on previous year's knowledge, while for achieving sampling optimization the tool devised by the MARE/2014/19 project will be used when it will be fully functional, according the agreement N° 3 of RCM MED&BS-LP 2016. When necessary, molecular techniques (DNA barcoding) are applied to quickly and accurately identify species, corroborating morphological identification of field-collected individuals. In order to detect seasonal differences, biological variables (age, weight, sex ratio, maturity) are collected on a quarterly basis. Regarding age data, quota sampling is employed, with the aim to collect 5-10 specimens (depending on the species) for each size class. Data are obtained through sampling at sea, and on shore. Samples from scientific surveys are used supplementary, mainly for the non-marketable fraction of the stocks, and for the closed season of the trawl fishery. Market samples are used, if the quota for each size group has not been achieved from the sampled trips.

Summarizing, sampling hierarchy is as follows: Vessel trips are randomly selected within each stratum (i.e., for every métier within each of the 12-sub-areas, when relevant) and then they are equally divided across the quarters. At sea, all hauls are selected (no stratification), and within each haul, samples are taken from the whole amount of landings. Regarding discards, the 10% of the volume in each haul is used. On shore, samples are taken from the whole volume of the landings.

Regarding elasmobranchs, landings of most species are negligible, given the lack of relevant target fisheries; thus, no particular sampling scheme is foreseen. However, in order to comply with Agreements no 1 & 2 of RCM MED & BS-LP 2016, size and biological data will be collected concurrently for all elasmobranch species, as reported in the GFCM-DCRF Appendix A.3 and in Tables 1C and 1D of the multi-annual Union Programme.

Concerning the Mediterranean swordfish, the data collection scheme follows the requirements of the established recovery plan (see comment in Table 4A).

(max 900 words per region)

Deviation from the sampling plan according to Article 5 paragraph (3) of the Implementing Decision (EU) 2016/1701:

2. Deviations from the Work Plan

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

In most of the cases the planned number of trips were achieved. Deviation exists for boat seines (metier SB-SV_DEF_0_0_0) that were active for only 2 months in 2020 and then their operation was suspended by ministerial decision. Also, for bottom trawlers (metier OTB_DEF_>=40_0_0) the planned number of trips was not achieved because due to the COVID-19 pandemic the vessels owners were reluctant to have onboard their vessels other people apart from their crew, given that the scientific personnel should stay overnight onboard the vessels.

3. Action to avoid deviations

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

Regarding the sampling onboards the bottoms trawlers, we expect that with the progress of vaccination in 2021 the situation will be normalized and the sampling will proceed as it was scheduled.

Regarding the boat seines, the métier SB_SV_DEF_0_0_0 has been selected for sampling because it was under Management plan (MP). After the finalization of the MP the operation of the fishing gear was suspended by ministerial decision (145/296596/2020). However, the Management Plan for boat seines in Greece was evaluated by the Scientific, Technical and Economic Committee for Fisheries (STECF) on 22-26 March 2021 and STECF concluded that the MP contains the elements supporting the request for derogations (3 years) for mesh size and distance from the coast. The decision on the COMMISSION IMPLEMENTING REGULATION is awaited in the near future in order to license three-year operation of the boat seines. The sampling of the métier will be adjusted according to the decision.

Also, we will try to eliminate the oversampling which however is done in order to achieve the higher possible coverage of length distributions of the main species.

(max. 1000 words per region OR fishing ground)

Text Box 5A: Quality assurance framework for biological data

General comment: This box is applicable to the Annual Report. This box fulfills Article 5 paragraph (2) point (a) of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is intended to specify data to be collected under Tables 1(A), 1(B) and 1(C) of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. Use this box to provide additional information on Table 5A of the Annual Report.

1. Evidence of data quality assurance

Within this section Member State shall provide information on the methodology used to assure the quality of the data collected, highlighting those aspects where changes have been made during the sampling year. Information shall be provided by each sampling scheme for which data was collected. In the case where the same quality assurance framework is applied to all data collection schemes, information can be provided at general level with the indication "all sampling schemes".
In those sections of Table 5A where "N" is indicated, Member States shall explain the main constrains and/ or the steps taken to fulfil this obligation. In the cases where a reference documents is requested; Member States shall provide a web link.
In cases where documents are not publicly available, due to institutions internal policy, confidentiality or other reasons, this shall be indicated by the Member State.

Sampling scheme for demersal and small pelagic commercial fishery on board and onshore

 and

Sampling scheme for eel sampling

 All Information on the methodology used to assure the quality of the data collected for the biological sampling related to a) demersal and small pelagic commercial fishery on board and onshore, b) eel sampling is reported in table 5A, where the web links to the reference documents are also provided.

2. Sampling design

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

MS indicated "Y" in the relevant questions of Table 5 A and provided the web links.

3. Sampling implementation

Explain main constraints and/or steps taken, if 'N' (no) was indicated in Table 5A.

MS indicated "Y" in the relevant questions of Table 5 A.

4. Data capture

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

MS indicated "Y" in the relevant questions of Table 5 A and provided the web links.

5. Data Storage

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A. Please provide a link if the documented revisions are available and not confidential.

MS provided the relevant information in Table 5 A.

6. Data processing

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

MS indicated "Y" in the relevant questions of Table 5 A and provided the web links.

(max. 900 words per Region/RFMO/RFO/IO OR sampling scheme)

Text Box 5A: Quality assurance framework for biological data

Recreational fishery

General comment: This box is applicable to the Annual Report. This box fulfills Article 5 paragraph (2) point (a) of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is intended to specify data to be collected under Tables 1(A), 1(B) and 1(C) of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. Use this box to provide additional information on Table 5A of the Annual Report.

1. Evidence of data quality assurance

Within this section Member State shall provide information on the methodology used to assure the quality of the data collected, highlighting those aspects where changes have been made during the sampling year. Information shall be provided by each sampling scheme for which data was collected. In the case where the same quality assurance framework is applied to all data collection schemes, information can be provided at general level with the indication "all sampling schemes".
In those sections of Table 5A where "N" is indicated, Member States shall explain the main constrains and/ or the steps taken to fulfil this obligation. In the cases where a reference documents is requested, Member States shall provide a web link.
In cases where documents are not publicly available, due to institutions internal policy, confidentiality or other reasons, this shall be indicated by the Member State.

Recreational Survey

The sampling implemented for recreational fishery during 2020 followed the plan of the NWP 2020-21. The outbreak of COVID-19 pandemic, the travel restrictions associated with it, as well as the prohibition of recreational fishery at certain periods of the year throughout the country, led to the cancellation of half of the scheduled sampling trips. The expected outcomes of the pilot study were achieved by the realisation of a number of the scheduled seasonal sampling trips when the opportunity was given and by expanding the network of trained interviewers hence increasing spatially the coverage of the sampled area in a stratified and properly randomized sampling.

2. Sampling design

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

The sampling design has not yet been documented. After the end of the pilot study, depending on the results that will occur and the conclusions that will be drawn, the sampling plan that will be followed in the regular sampling will be decided.

Information on the sampling design of the pilot study is reported on the NWP 2021

3. Sampling implementation

Explain main constraints and/or steps taken, if 'N' (no) was indicated in Table 5A.

Two seasonal samplings trips, lasting four days each, were performed by trained personnel using a special protocol / questionnaire designed for this purpose. The protocol records details of fishing method, species caught and released, biological data and expenses. It was not particularly difficult to approach the majority of the recreational fishermen with the exception of those engaged in spearfishing for which there was difficulty in locating and interviewing. Efforts were made to contact members of local fishing associations and a number of telephone interviews were conducted.

4. Data capture

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

Data collection took place according to the provisions of the Pilot study 1 as described in NWP 2020-21.

5. Data Storage

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A. Please provide a link if the documented revisions are available and not confidential.

The collected data is temporarily stored in the databases of the two institutes (FRI & HCMR) that implement the DCF. The databases have been modified accordingly for data entry, storage and analysis.

6. Data processing

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

The Member State will be able to fully describe all the procedures followed to assess the accuracy of the data as well as the methods of processing and imputation after the end of the pilot study,

 (max. 900 words per Region/RFMO/RFO/IO OR sampling scheme)

Text Box 5B: Quality assurance framework for socioeconomic data

FISHING FLEET

General comment: This box fulfills Article 5 paragraph (2) point (b) of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is intended to specify data to be collected under Tables 5(A), 6 and 7 of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. Use this box to provide additional information on Table 5B of the Annual Report.

1. Evidence of data quality assurance

Within this section MS shall provide information on the methodology used to assure the quality of the data collected, highlighting those aspects where changes have been made during the sampling year. Information shall be provided by each sector (Fishing fleet, Aquaculture, Fish processing) for which data was collected and by each data collection scheme. In the case where the same quality assurance framework is applied to all sectors or/and all data collection schemes, information can be provided at general level with the indication "all sectors" or "all data collection schemes".
In those sections of Table 5B where "N" is indicated, Member States shall explain the main constrains and/ or the steps taken to fulfil this obligation. In the cases where a reference documents is requested, Member States shall provide a web link.
In cases where documents are not publicly available, due to institutions internal policy, confidentiality or other reasons, this shall be indicated by the Member State.

Evidence of data quality assurance in **Fishing Fleet**

2. Section P3 Impartiality and objectiveness

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

MS indicates "Y" in both questions regarding Section P3

3. Section P4 Confidentiality

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

MS indicates "Y" in all three questions regarding Section P4

4. Section P5 Sound methodology

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B
Information on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

MS indicates "Y" in all questions regarding Section P5.

The data collection scheme follows methodologies, guidelines and best practices agreed in expert groups (in particularly PGECON 2017 & 2018, Social and new economic variables workshop PG ECON, SGECA09-02 as well as Moura, 2016).

The majority of the economic data was collected through sample survey as already discussed in previous paragraphs. Bias and variability indicators were used as quality indicators. Particularly, the bias indicators provided were the coverage rates (planned and achieved) and response rates, while the variability indicator provided was the CV. For key economic variables such as energy consumption and energy costs, imputation techniques were used.

It should be noted that the target and the frame population are the same and therefore there is no coverage error. As far as measurement errors are concerned, the submitted data were evaluated thoroughly using several indicators.

Furthermore, data collectors were properly trained and written guidelines regarding the collection process was provided to them

MS have already published an updated version of the Methodology report v.3. (available at: www.agreri.gr/sites/default/files/projects/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203%20%281%29.pdf)

5. Section P6 Appropriate statistical procedures

MS positively replies to all the questions.

6. Section P7 Non-excessive burden on respondents

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Duplication of data-collected is not avoided. MS plans to organize data collection and administrative data in such a way that duplication of data collected will be avoided. However, this plan has not yet implemented.

7. Section P8 Cost effectiveness

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

MS indicated "Y" to the question regarding Section P8. MS has already construct excel functions and tools to automatically capture, code and validate data. However, MS plans to construct a powerful database that, among others, can automatically capture, code and validate data. MS planning to finalise the construction of this database in the next months, before the end of the programming period.

8. Section P9 Relevance

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

End users are already listed and updated

9. Section P10 Accuracy and reliability

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Information on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

Response rate and Achieved sample rate are provided in Table 3A.

MS source data, intermediate results and statistical outputs are regularly assessed and validated, using data quality indicators and benchmark tables. In case, of extreme values and outliers, internal communication is implemented with data collectors to correct possible typing errors.

Sampling and non-sampling errors are measured and systematically documented according to the European standards. Morever, internal procedures and guidelines to measure and reduce errors are in place such as:

- Identification of the main sources of error;

- Quantification of sampling errors;

- Identification and evaluation of main non-sampling error sources in statistical processes;

- Special attention to outliers;

Quality reporting on accuracy is guided by EU/regional recommendations and methods. Moreover, tools for preventing and reducing sampling and non-sampling errors are in place (See Methodology report v.3, available at:

https://www.agreri.gr/sites/default/files/projects/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203%20%281%29.pdf

10. Section P11 Timeliness and punctuality

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

MS indicates "Y" in the question regarding Section P11

11. Section P12 coherence and comparability

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

There are already procedures and guidelines to monitor internal coherence. These procedures deal with consistency between preliminary and final data and between micro data and aggregated data.

About statistics comparability, sampling scheme has changed during the reference period 2012-2017, and this is why statistics in some segments are not comparable over time (MS answered "N" in question: "Are statistics comparable over time?". Moreover, the delay at the beginning of the National Programs, in previous years, have created important time gaps. Finally, it has to be noticed that the National Programme was not implemented during the period 2009-2012. MS has already started to organize the database and plans to finalize it until the end of 2021. Doing this, MS is going to eliminate time gaps and ensure statistics comparability.

12. Section P13 Accessibility and Clarity

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Information and links to documentation on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

MS indicates "Y" in the question regarding Section P11. Documentation can be found in http://www.agreri.gr/en/node/93.

(max. 900 words per Region/RFMO/RFO/IO/NSB OR sector)

Text Box 5B: Quality assurance framework for socioeconomic data

AQUACULTURE AND PROCESSING INDUSTRY

General comment: This box fulfills Article 5 paragraph (2) point (b) of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is intended to specify data to be collected under Tables 5(A), 6 and 7 of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. Use this box to provide additional information on Table 5B of the Annual Report.

1. Evidence of data quality assurance

Evidence of data quality assurance in **Aquaculture and Fish Processing Industry**

Within this section MS shall provide information on the methodology used to assure the quality of the data collected, highlighting those aspects where changes have been made during the sampling year. Information shall be provided by each sector (Fishing fleet, Aquaculture, Fish processing) for which data was collected and by each data collection scheme. In the case where the same quality assurance framework is applied to all sectors or/and all data collection schemes, information can be provided at general level with the indication "all sectors" or "all data collection schemes".

In those sections of Table 5B where "N" is indicated, Member States shall explain the main constrains and/ or the steps taken to fulfil this obligation. In the cases where a reference documents is requested, Member States shall provide a web link.

In cases where documents are not publicly available, due to institutions internal policy, confidentiality or other reasons, this shall be indicated by the Member State.

All the information on the methodology and the quality assurance framework for both "Aquaculture" and "Fish processing industry" is provided in Table 5 A and in the reference document that can be found in the link. https://inale.gr/national-fishing-data-collection-program_el/ .

2. Section P3 Impartiality and objectiveness

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

MS indicates "Y" in both questions regarding Section P3

3. Section P4 Confidentiality

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

MS indicates "N" in all three questions regarding Section P4. Data sources for both sectors, aquaculture, and processing, are companies' published balance sheets and questionnaires. Since balance sheets are available mostly online from companies' websites and Ministry of Finance's databases, due to enterprises' obligation to publicize them, confidentiality is mainly pointed out during pre-data collection communications and during on site interviews, where interviewees are assured about the confidentiality of the data they provide, and no personal data is collected. Although the importance of confidentiality and the procedures to collect and input survey data maintaining confidentiality is strongly emphasized during survey planning and survey meetings, the confidentiality procedures are not clearly documented and protocols to enforce confidentiality between DCF partners and external users are not in place. The new database of the survey data ensures confidentiality by permitting specific users with recorded account names and passwords to input and manage survey data for both aquaculture and processing sectors

4. Section P5 Sound methodology

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Information on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

MS indicates "Y" in all questions regarding Section P5.

The data collection methodology follows the National Work Plan 2020-2021 and the methodologies, guidelines and practices agreed by PGECON, are implemented in the survey. Most of the economic data was collected via census method. As it is mentioned in the previous Text boxes, the estimation procedure was applied for certain values (e.g. energy cost and unpaid labor) due to inadequate input of small companies or companies' reluctance to answer, using either the non-probability sample survey method (in aquaculture) or probability sample survey method (in processing), using the corresponding and more descriptive data of large companies again according to National Work Plan

5. Section P6 Appropriate statistical procedures

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Please provide a link if the documented revisions are available and not confidential.

Regarding financial data, questionnaires are designed according to Greece's administrative financial data and according to accounting regulations and standards. Quantitative and socio-economic data are collected according to Greece's National Work Plan

6. Section P7 Non-excessive burden on respondents

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Duplication of data-collected is avoided by following a specific schedule for onsite visits for filling out questionnaires and balance sheets processing, according to a list of companies that participated in previous surveys that is continuously updated to exclude non-operating companies during the survey year, those without publicized balance sheets and/or those refused to provide any data.

7. Section P8 Cost effectiveness

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Data input and processing is under monitoring by spreadsheet tools to avoid input of false data by comparing new values to values of previous years surveys, taking into consideration the companies' previous potential and economic performance. The new database that is handles the survey data also provides efficient tools for the same purposes

8. Section P9 Relevance

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

End users are already listed and updated.

9. Section P10 Accuracy and reliability

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Information on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

The guidelines and practices agreed upon by program's partners and experts, were followed and monitored by monthly work reports and regular work meetings to guarantee proper implementaion of the survey schedule and avoid possible errors. Any errors are recorded and actions to avoid them are decided during the meetings

10. Section P11 Timeliness and punctuality

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

MS indicates "Y" in the question regarding Section P11

11. Section P12 coherence and comparability

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Internal coherence is monitored during data collection, following the agreed upon procedures and during data entry and comparison to the previous years recorded data.

Aquaculture and processing companies' financial data, as well as socio-economic data is comparable over time as it follows Greece's National Work Plan and previous survey years' National Proposal for types of values according to accounting regulations and standards

12. Section P13 Accessibility and Clarity

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Information and links to documentation on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

Are methodological documents publicly available? **Yes**

Are data stored in databases? **Yes.**

Data is stored first in spreadsheets for processing and then uploaded on a new and improved database.

Where can methodological and other documentation be found?

The methodological documentation can be found in the pdf file ***"Methodology and Data Quality Assurance Framework for Socio-Economic Variables on Aquaculture and Fisheries Processing"*** which has been uploaded and is available on the web site of the Ministry of Rural Development and Food, in the data collection section. The link is

http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/Data_Quality_Aquacalture.pdf

also in the web site of the Fisheries Research Institute in the data collection section under the link:

https://inale.gr/national-fishing-data-collection-program_el/

(max. 900 words per Region/RFMO/RFO/IO/NSB OR sector)