MINISTRY OF RURAL DEVELOPMENT AND FOOD
DIRECTORATE GENERAL FOR FISHERIES
HELLENIC AGRICULTURAL ORGANISATION-DEMETER

Regulation (EU) 2017/1004 of 17 May 2017

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

Commission Implementing Decision (EU) 2016/1251 of 12 July 2016

adopting a multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019

Commission Implementing Decision (EU) 2016/1701

laying down rules on the format for the submission of work plans for data collection in the fisheries and aquaculture sectors.

Greece Work Plan for data collection in the fisheries and aquaculture sectors

2017-2019

Version 2 – 2019

Kavala, 31 October 2018

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.Apostolos Karagiannakos, whose contact details are:

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The Data Collection Programme for Greece is carried out by two partners, the Hellenic Agricultural Organization – Demeter (HAO-DEMETER) 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 HAO-DEMETER participates the Fisheries Research Institute (F.R.I) and the Agricultural Economics Research Institute (AGR.E.R.I). 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. All data are stored in local databases and finally will be held and stored at the premises of the Ministry of Rural Development and Food. Moreover a web page on Data Collection Programme for Greece, has been developed under the premises of the Fisheries Research Institute.

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SECTION 1: BIOLOGICAL DATA

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

General comment: This Box fulfills paragraph 4 of Chapter V of the multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (a) of this Decision.

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 relating to the monitoring of recreational fisheries, a pilot study has already begun and is currently being updated in order to estimate, as accurately as possible, a number of parameters relating to recreational fishermen and their catches in Greece. The primary objectives of the pilot study are: a) to estimate the number of active recreational fishermen in Greece b) to record their fishing practices and activity c) to collect biological and quantitative data of their catches. The study covers all types of recreational fisheries in Greece.

2. Duration of pilot study

The duration of the pilot study is three years and is implemented in two phases. During the first phase a screening survey was conducted to identify the number of recreational fishermen and their demographics. Administrative and funding problems have delayed the initiation of the pilot study which started in the last months of 2017 and ended the first quarter of 2018. The preliminary results of the demographics of the sector were presented in the RCG MED & BS 2018 meeting. During the first phase of the project, data was gathered from a sufficient number of fishermen (5.500 individuals). During the second phase some of them (circa 130), from all recreational fishing activities (boat, coast and spear fishing), are willing to cooperate on a voluntary basis with the researchers for the 12 month diary survey.

The second phase of the project was planned to begin in the first months of 2018, aiming at a detailed monitoring of the fishing activities and a number of biological parameters of their catch through regular contact (monthly) between the researchers and the participants. However due to bureaucratic and administrative constraints the diary survey started in autumn 2018 and will continue in 2019. During the 3rd phase, a small-scale "on-site"sampling program will be conducted, in parallel with the diaery survey, in order to collecting additional independent data on catches, size and composition of fish caught by recreational fishermen.

3. Methodology and expected outcomes of pilot study

The screening survey (1st phase) was performed through a telephone/online survey by a commercial company, which used an ad hoc questionnaire addressed to the households from its database since it is possible for every household to have more than one recreational fishermen. This survey was developed as described in Figure 1. The questionnaire was short and simple. The data collected from the survey was used for the estimation of the average number of fishermen in each household during the last 12 months. These estimates will be used in combination with the available data of national census in order to assess the total number of inhabitants of the country engaged in recreational fishing. The demographics such as age, sex, education level, employment status and place of residence were checked by the company to ensure that they do not deviate from the demographics of the general population.

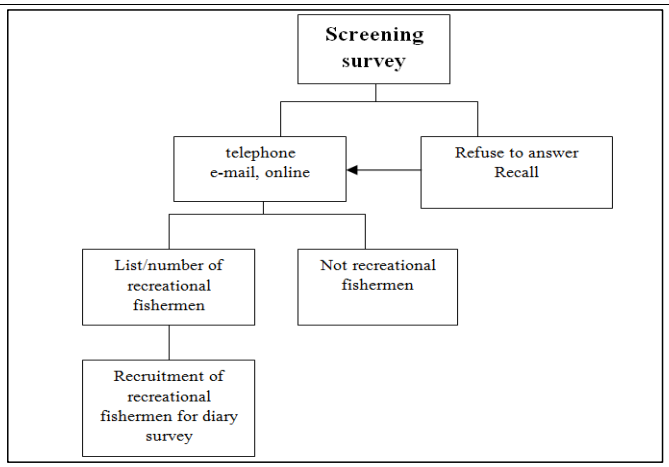

Figure 1. Screening survey.The questionnaire was designed in order to maximize response rates and get the minimum information required to determine the eligibility of the respondent for the more detailed diary research that will follow.

Respondents were asked if they have gone fishing during the last twelve months and where, what equipment was used, how many trips/days/hours were performed, so to determine the level of fishing activity, which species they caught and if they would be interested to participate in a diary survey to record more detailed and quantitative data during the forthcoming months.

Diary Survey (2nd phase)

Approximately 130 participants were chosen for the diary survey based on the analysis of the demographic data and their fishing activity in order to form a representative sample of recreational fishermen in the country. The chosen participants were sent an envelope containing, a measuring tape, 10 diary sheets, instructions on how to fill them out, a sample diary sheet, a letter thanking them for their participation along with a prestamped and pre adressed envelope for returning the filled in diary sheets. They have agreed to report the data recorded in their diaries, on a monthly basis in relation to their fishing trips such as information about the location of fishing, fishing gears used, catches (species, number, weight), if they detained or released the catch, the reason for the release. At the same time, researchers are in telephone contact with the participants in order to remind them and keep their interest alive. Recreational fishermen are still contacting FRI for their participation and in doing so, they are sent the aforementioned envelope containing the diary sheets. Due to the aforementioned problems the diary survey begun in autumn 2018 and will continue in 2019.

On site sampling (3rd phase)

Onsite sampling will be carried out in parallel with the diary survey. FRI collaborators will record biological data from three selected cites/ports in order to record in situ both activities (boat, coast and spear fishing) and catches (species, numbers and weight) in order to validate the reliability of the data reported from the diaries. Integration of self-reporting tools with independent monitoring tools (such as onsite 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 pilot study the number of active recreational fishermen both in marine and fresh waters and critical qualitative and quantitative data on recreational fishing in Greece will be identified and evaluated for the first time. *(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 multi-annual Union programme and Article 2 of this Decision.

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, age, weight, sex ratio) on silver eels populations will be collected, during their spawning migration at the end of the year. The capture of silver eels is done in permanent installed fishing devises in the entrance of the lagoons that are operated by Fishing co-operatives, and they are considered as the most important habitats for the eels.

As for the non-commercial part of the population (glass and yellow eels), during the first year of the project a pilot study will be implemented on allEMUs, where eel populations exist. The study will be implemented in lagoons in one river basin, in each of the EMUs. In EMU 1 the study will take place in the lagoons Tsoukalio - Logarou of the Louros River Basin, in EMU2 in the lagoons Tholi-Prokopanissos of the Axeloos River Basin. Finally, in EMU 3 it will take place in the estuarine system of Vistonida.

The main scope of the pilot study is to standardize the methodology that will be used the following years regarding the stock of glass and yellow eel. The capture of the glass eels will be performed using traps made specifically for this purpose, while for the yellow eels, fyke nets are the gear of preference.

In the following years, (second and third of the National Project) the outcomes of the pilot study, i.e. best fishing gear for glass and yellow eel capture, problems raised during the implementation of the pilot study, solutions used to overcome these problems, will be taken into account in order to provide the first data on glass eel recruitement and yellow eel abundance for the Greek population of the species *Anguilla anguilla*.

The pilot study will be implemented by the Hellenich Fisheries Research Institute with the collaboration of the Departments of Biology in the Universities of Patra and Ioannina, where eel populations exist.

(max 250 words per Area)

SECTION 1: BIOLOGICAL DATA

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 multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (b) of this Decision.

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 updating 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 protected by the Council Directive 92/43 and the Barcelona Convention. To record data for these species, Greece adopted the sampling protocols provided by MARE/2014/19 project. These protocols are dedicated to specific marine species groups: fishes, sharks & rays (Protocol 1), cetaceans (Protocol 2) and sea turtles (Protocol 3). Additionally, a protocol dedicated to birds (Protocol 4) has also been designed and applied. 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 gillnets (2020) for the GSAs 20, 22 and 23. The sampling schemes 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 calculation of a capture rate through the division of the number of specimens caught during the observations on board by the number of observed days at sea. For each species, the total number of specimens caught by quarter will be estimated with extrapolation of the quarterly capture rate to the total number of fishing days for each quarter.

(b) Impact of fisheries on marine habitats.

Marine ecosystems' structure and function is greatly affected by their spatial heterogeneity. The spatial distribution of ecosystem resourses 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 special licence vessels (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 2019 Greece has planned 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.

References

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)

Text Box 1G: List of research surveys at sea

MEDIAS

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 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 (2015) 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 2015).

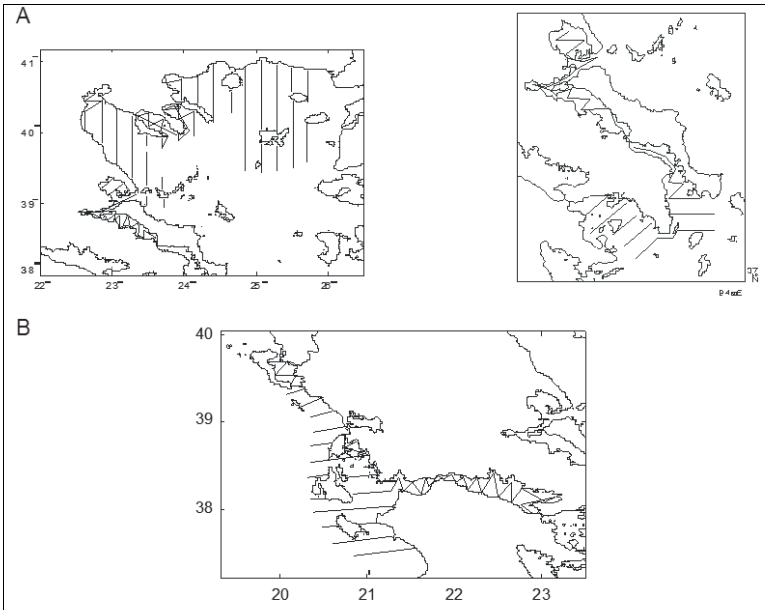

Fig. 1G.1. Pre-defined MEDIAS acoustic transects in Aegean Sea (GSA 22) and Ionian Sea (GSA 20).

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)

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_2013_version_7_25092013.pdf.

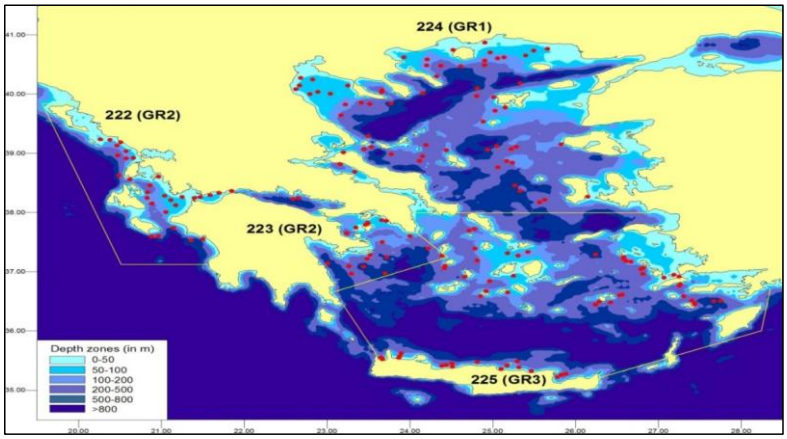

Fig. 1G.2. Map of the sampling areas and sampling stations in the GSAs 20, 22, 23. Red spots represent the sampling stations.

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 Greece, Spain, Italy, France, Croatia. 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)*

SECTION 2: FISHING ACTIVITY DATA

Text Box 2A: Fishing activity variables data collection strategy

General comment: This Box fulfills paragraph 4 of Chapter III of the multi-annual Union programme and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of this Decision. 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.

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 of fishing effort and landing, 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 and 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)*

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

General comment: This Box fulfills paragraph 5 points (a) and (b) of Chapter III of the multi-annual Union programme and Article 2, Article 4 paragraphs (1), (2) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Tables 5(A) and 6 of the multi-annual Union programme.

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 14,934 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, since for these variables data from the National fleet register will be used. **Census** will also be used for 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 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 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 uses require special permits 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 is designed and operated 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)

SECTION 3: ECONOMIC AND SOCIAL DATA

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 multi-annual Union programme and Article 2 and Article 3 paragraph (3) point (c) of this Decision. It is intended to specify data to be collected under Table 6 of the multi-annual Union programme.

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 will 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.

2. Duration of pilot study

The pilot study will be 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 pilot study will be one year. The social variables will be collected triennually as required by the multi-annual Union programme. Specifications on the collection of the social variables and the duration of the pilot study will be provided by the PGECON workshop that will be held in 2017.

3. Methodology and expected outcomes of pilot study

The pilot 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 (2018).

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

- *Employment by gender,*
- *Unpaid labour by gender,*
- *Employment by age,*
- *Employment by education level,*
- *Employment by nationality*
- *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 will be provided by the PGECON workshop that will be held 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 the 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 thethreshold 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 is 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 will be updated and reassessed, the instructions for the data collectors and the database will also be updated to include the social variables and the estimation procedures will be validated. Another important outcome of the pilot study is the identification of difficulties and problems that maybe encountered during the collection of the social variables and their possible solutions.

(max 900 words)

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 multi-annual Union programme and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Tables 6 and 7 of the multi-annual Union programme.

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

Fish and shellfish have been produced using aquaculture techniques in Greece since early 1960s. The strengthening of the aquaculture industry with the implementation of new techniques and the rapid increase of production commenced in late 1990s, when the amount of captures fish reached a plateau while the demand for aquatic product continued to rise.

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

At present, aquaculture (in fact mostly marine culture), is considered a major industry in Greece, not only because of the impressive results in production volumes but also it is significant in socio-economic terms, employing roughly 3,893 employees, mostly men with a percentage ≈78%. Estimations show that the sector provides employment to more than 10,000 people, through direct and indirect activities.

It should be noted that the majority of aquaculture units in Greece, are not financially autonomous entities but 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.

For the fiscal year 2014, 248 companies were recorded in aquaculture sector owning or leasing 498 aquaculture units (consist a 75.34% part of the whole sector while their income make up for 90-95% of the sector's total) and producing a turnover of 448,146,511€ (29,303,797€ sales of fry and 418,843,714€ sales of fish or shellfish in final form). The main species of national aquaculture production are sea bream and sea bass, and hold 72.6% in terms of volume and 94% in terms of value.Of the aforementioned 248 companies that took part in the last year's survey, 97 are SA or Ltd enterprises with published annual balance sheets and yearly financial statements.

Basic source for the collection of economic data during 2017-19 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.The duration of the first stage will be 60 days.

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 duration of the second stage will be 90 days.

The questionnaire will include the following 3 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.

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, the previous 2015 survey showed that companies provided only the sales values offry 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 the last survey's 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)

SECTION 3: ECONOMIC AND SOCIAL DATA

Pilot Study 4: Environmental data on aquaculture

General comment: This Box fulfills paragraph 6 point (c) of Chapter III of the multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (d) of this Decision. It is intended to specify data to be collected under Table 8 of the multi-annual Union programme.

1. Aim of pilot study

In Greece, data (mortality, antibiotics, etc.) may be recorded at a 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). Ourconcern is that inclusion of mortality and antibiotics data within thesurvey could compromise response rates.

2. Duration of pilot study

The duration of the pilot study will be two years starting from 2018.

3. Methodology and expected outcomes of pilot study

The following 2 years, an effort will be made to gather information, by inserting an appropriate section at the questionnaire, which will be sent only to a small but representative number of enterprises(which represent 50% of sector´s total turnover), those who already publish data on the internet or participate in surveys carried out by universities, institutes and state organizations (Non Probability Survey). 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)

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

General comment: This Box fulfills footnote 6 of paragraph 1.1(d) of Chapter III of the multi-annual Union programme, Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Table 11 of the multi-annual Union programme.

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.

159 small to medium sized enterprises (SMEs) are engaged to the processing industry (2015 data).During the last twenty years, eight annual surveys were carried out, four by the national authorities and the last four under the « National Fisheries Data Collection Program», collecting data of the Hellenic seafood processing sector in regard to its current and future trends.

The previous surveys and the data collected until now, result in the following facts: From 1998 till 2007 the number of enterprises decreased by 8.57%, but at the same time the total industry production increased by 234%. The years that followed2009, at the peak of the economic crisis, there was a 16.75% decline in number of companies and a 10.08% decline in sales of processedproducts.In 2014 the frozen products industry, presented a 74.37% increase of their production compared to 1998. On the other hand a decrease of in the processing industry compared to 2003 (-53.65%).

According to the latest data, for the fiscal year of 2014, there were 150 companies with proven activity of freezing, processing of fish, and the de-shelling of mussels of which 133 participated in the survey, including 45 SA and Ltd companies with published annual balance sheets. Those 45 firms account for over 82.6% of the fish processing industry based on raw material purchases.

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 companiescombined 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 regularlyon 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 enterpriseswith ≥ 11 employers and to 80% of the enterprises with ≤ 10 employers (stratified random sampling strategy) in the sector.

During the last 5 years of fisheries processing data collection, 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 (>85 %), 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 (<10-15% 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 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)

Text Box 4A: Sampling plan description for biological data

General Comment: This Box fulfills Article 3, Article 4 paragraph (4) and Article 8 of this Decision and forms the basis for the fulfilment of paragraph 2 point (a)(i) of Chapter III of the multi-annual Union programme. This Table refers to data to be collected under Tables 1(A), 1(B) and 1(C) of the multi-annual Union programme.

Description of the sampling plan according to Article 5 paragraph (3) of this Decision

Mediterranean Sea

The Greek fishing fleet consists of a large number of vessels (the largest in the EU) of low tonnage and power. According to the National Fleet Register of 31/12/2016, the fleet consists of 15,183 registered fishing vessels with a total tonnage of 71,762 GT, total power of 430,812 KW and average age of 28 years. The great majority (~95%) of the fleet consists of 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, i.e., the largest in the Mediterranean), targeting the 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).

The Greek fishing fleet is categorized in the following three major categories depending on the fishing activity:

a. Trawl fishery, consisting of 258 vessels (1.7% of the Greek fishing fleet), while its production represents ~25% of total fisheries production. It t is a mixed fishery that targets demersal species and is only one métier (**OTB_DEF_>=40_0_0**).
b. Pelagic (purse seine) fishery consisting of 245 vessels (1.6% of the Greek fishing fleet). It targets mainly small pelagic species (anchovy and sardine), mackerel and horse mackerel as well. It is only one métier (**PS_SPF_>=14_0_0**).
c. Coastal fishery, which is the largest part (95.1%) of the Greek fishing fleet (14,443 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 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 the Commission Decision 2010/93/EU. Data used for the ranking were the average data on landings, value and effort over the years 2014 & 2016 resulting in 8 métiers in total, as described above. The Hellenic coastline and marine area of the 3 aforementioned GSAs are divided in 12 major 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 effort (number of days at sea) for each métier during the reference year. The source of data is the official national fleet registry used to classify vessels by fleet segment and area, and the DCF data collection system of the reference year used for the effort data that were attained based on the sampling scheme. The target population is the number of trips of all commercial vessels per GSA, for the reference year (Table 4D). The frame population is the number of trips of the commercial vessels that fish in the selected by the ranking métiers, at GSA level (Table 4C). The PSU selection is performed through random-draw of a trip by métier and per GSA, with the option to replace the trip in case that the vessel owner refuses the cooperation (Table 4B). Thus, the sampling scheme is based on the principles of stratified random sampling

(8 métiers X 12 sub-areas), implemented through sampling trips performed by observers at sea and on shore (landing sites). The sampling trips are performed quarterly, taking into account the temporal distribution of the effort within each métier and area. For inshore vessels (~95% of total fleet), 1/3 of the sampling trips is performed at-sea and the 2/3 on-shore. For 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 described in Table 4A.

Biological data on weight, age distribution, sex ratio and maturity is collected for the stocks listed in Tables 1A, 1B, 1C of Com. Imp. Dec 2016/1251 and GFCM-DCRF Annexes A.1, A.2, A.3 (i.e. stocks that their landings are above 200 t or the share of the country in the EU Mediterranean landings is above 10%). The sampling scheme is stratified random sampling, with GSAs as the basic stratum while the PSU is the fishing trip. Métiers are not used as a stratum in this case, since the aim is to derive the biological data on the stocks level, irrespectively of the fishing gears. The stocks included in the sampling scheme are listed on Table 1A of NWP The planning of sampling for biological variables is presented in Table 1 B of NWP and complies with the agreement no.2 of RCM MED&BS-LP 2016.The sampling intensity for each species is presented in Table 1C of NWP 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. Molecular techniques (DNA barcoding) are applied to quickly and accurately identify species, corroborating morphological identification of field-collected individuals. The biological variables (age, weight, sex ratio, maturity) are collected quarterly to detect seasonal differences in the structure and composition of the species examined. Regarding age distribution, quota sampling is employed, with the aim to collect 5-10 specimens (depending on the species) for each size class. Data sources are the commercial samples collected through sampling at sea, and on shore per GSA. Samples obtained from scientific surveys can also be used supplementary, mainly for the non-marketable fraction of the stocks, and for the closed season of the trawl fishery. In addition, samples from the market or from discards can also be used, if the quota for each size group has not been achieved through the sampling trips, especially for the largest and the smallest specimens.

The sampling hierarchy is the following: Vessel trips are randomly selected within each stratum (i.e., for every métier within each of the 12-sub-areas, where it is relevant, thus 8 métiers X 12 areas) 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 the discards, the 10% of the volume in each haul is used. On shore, the samples are taken from the whole volume of the landings. The species to be sampled for length composition or for biological data are selected as described above (based on the Tables 1A, 1B, 1C, 1D of Com. Imp. Dec 2016/1251 and GFCM-DCRF Annexes A.1, A.2, A.3.). Regarding length composition, a random sample of 50-100 individuals (depending on availability) per species is selected from the landings and from the discards (separately) per haul (at sea), while on shore the samples are taken from the total amount of landings. Concerning biological data, specimens for each species are sampled based on their size, so that eventually 5-10 specimens per size group of each species (in each GSA) will be selected annually (quota sampling).

Regarding the elasmobranches, for most of the species, their landings are negligible. However, in order to comply with the Agreements no 1 & 2 of RCM MED & BS-LP 2016 length data and other biological information will be collected concurrently for all elasmobranches species, as reported in the GFCM-DCRF Appendix A.3 and in the Tables 1C and 1D of the Com.Imp.Dec.1251/2016. Due to the low occurrence of these species no planning scheme and sampling intensity can be applied.

Concerning the establishment of a recovery plan on Mediterranean swordfish, the workplane already includes the collection of adequate scientific information for highly migratory pelagic species in the Mediterranean (see comment in Table 4A).

(max 900 words per Region)

ANNEXES

ANNEX1. PILOT STUDY 2: LEVEL OF FISHING AND IMPACT OF FISHERIES ON BIOLOGICAL RESOURCES AND MARINE ECOSYSTEM

Protocol 1.Catch Summary Sheet

Vessel Name:	Reg No:
Haul No:	Haul Area:
Type of gear being used:	Trip Code:

Shot	Hauled
Date: Time: Depth: Speed over Ground: Lat: Lon:	Date: Time: Depth: Speed over Ground: Lat: Lon:
Tow or gear soak duration hrs/mins: Tow Direction: Warp Length: Door Spread:	Wind direction & force: Sea State:
Comments:	

Species Caught:	No of Individuals:	Weight (kg):

Protocol 2. Data sheet for size recording: Fish, sharks and rays

Trip Code	Haul No	Species	TL (cm)	DW (cm)	Weight (kg)	Sex	Condition	Released	ID image	Notes

Protocol 3. Data sheet for cetacean by catch recording

Date		Time		Haul No	
Trip Code				ID Specimen	
Species					

Condition	Excellent	Good	Poor	Comatose	Dead

TBL (cm)		Sex	M
GFD (cm)			F
Weight (kg)			ND

ID Image	

Notes	

Protocol 4. Data sheet for sea turtle by catch recording

Date		Time		Haul No	
Trip Code				ID Specimen	
Species					

Condition	Excellent	Good	Poor	Comatose	Dead

CCL (cm)		LCL (cm)		Sex	M
CCW (cm)		LCW (cm)			F
Weight (kg)					ND

ID Image	

Notes	

Protocol 5. Data sheet for bird by catch recording

Program	National
Vessel Name	

Date		Time		Haul No	
Trip Code				ID Specimen	
Species					

Condition	Excellent	Good	Poor	Dead

ID Image		
Released	A,D,NA	
Notes		