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
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

Commission Implementing Decision (EU) 2018/1283
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

2019

Version [1]

Athens, 31 May 2020
**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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Web link for Data Collection Programme: [http://www.alieia.minagric.gr/node/20](http://www.alieia.minagric.gr/node/20)

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) (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.

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SECTIO\nN 1: BIOLOGICAL DATA

Text Box 1C: Sampling intensity for biological variables

General comment: This box fulfils paragraph 2 point (a)(i)(ii)(iii) of Chapter III, Chapter IV of the multiannual Union programme and Article 2, Article 4 paragraph 1 and Article 8 of the Decision (EU) 2016/1701. This box is applicable to the Annual Report.

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

1. Evidence of data quality assurance

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 http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/Sampling\%20scheme\%20\%26%20Data %20Quality\%20Assurance%20Framework_2019.pdf and 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 follows 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.

- Biological data on weight, age distribution, sex ratio and maturity are collected from commercial fishery by sampling at sea, on shore and at market through quota sampling, (3-12 specimens, depending on the species, for each size class). Additional samples are taken from scientific surveys (MEDIT, MEDIAS), if the quota for each size class has not been achieved by commercial fishery, especially for the larger and the smaller sizes classes of the species. Therefore, the two data sources are supplementary and the planned target for each species is their sum. This, justify the oversampling that may be noticed in one of the data sources of a species, which usually is done to cover the data needs.

- As it has been mentioned above biological data are collected through quota sampling mainly from commercial fishery. The sampling scheme of Greece is based on the principles of stratified random sampling, employing the métier (level 6) as the basic stratum and it is implemented through concurrent sampling performed by observers at sea and on shore. When observers are on board measurements are taken from a random subsample of all the hauls (sampling does not stop after a few hauls, but lasts until the end of the trip and all the individuals of the subsample are measured). For example for hake in a fishing trip/day the sample for biological variables does not exceed the 50 individuals as we try to have many samples from different trips and from all the seasons; for the same species in one fishing trip/day length measurements will be taken from at least 1000 individuals [100 ind *5 hauls * 2 catch fractions (marketable/discards)]. Therefore:
  - the sum of lengths from Table 1C (samples taken for biological variables) will always be much lower from the sum of length declared in Table 4A (samples taken for the estimation of the volume and length of the catch fractions),
  - it is difficult to harmonize the planned number of individuals with the ones that are finally achieved. For the abundant species is very difficult to avoid oversampling, while for the less...
abundant it is possible to realize all the planned sampling trips and even more without succeed to cover the planned number of individuals.

- **sampling intensity**

**Length, Weight, Sex ratio, Sexual maturity**

**GSA 20**

Under sampling was observed for all variables for the following species *Eledone moschata, Illex spp./Todarodes spp., Loligo vulgaris, Lophius budegassa, Mullus surmuletus, Nephrops norvegicus, Octopus vulgaris, Sardina pilchardus, Scomber colias, Sepia officinalis* and for the species *Boops boops* only for Sex ratio and Sexual maturity.

**GSA 22**

Under sampling was observed for 3 species *Octopus vulgaris, Solea solea* and *Sparus aurata* related to different reasons. *Solea solea* and *Sparus aurata* are species been targeted mainly by small scale fishery, few individuals are caught in each fishing trip and are usually pre-sold as they have high demand in the market. Also, few specimens of these species are caught in MEDITS survey. *Octopus vulgaris* is a species mainly caught by pots and traps fishery. The activity of this type of fishery was limited during 2019 (see also Table 4 A).

For the species *Eledone moschata, Micromesistius poutassou, Nephrops norvegicus Spicara smaris Trachurus mediterraneus*, lower catches were noticed in MEDITS survey. However, the overall planned target of these species was covered by oversampling in commercial fishery. Vice versa, for the species *Lophius budegassa* and *Trachurus trachurus* 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 covered for all the species apart from *Pagellus erythrinus* for which the planned number from the commercial samples were covered however no individuals of the species were caught during 2019 MEDITS survey.

**Age**

**GSA 20**

Under sampling was observed for the following species, *Boops boops, Lophius budegassa, Mullus surmuletus, Sardina pilchardus, Scomber colias*.

**GSA 22**

Under sampling was observed for 2 species *Solea solea and Sparus aurata*. For the species *Micromesistius poutassou, Spicara smaris, Trachurus mediterraneus, Lophius budegassa* and *Trachurus trachurus* the samples taken from commercial fishery and from the MEDITS survey, covered the overall planned number needed for age determination of the above species.

**GSA 23**

The target was covered for all the species apart from *Pagellus erythrinus*.

**ICCAT SPECIES**

**Length, Weight, Sex ratio, Sexual maturity**

The planned minimum no of individuals to be measured was achieved for length and weight variables for the species *Sarda sarda, Thunnus alalunga* and *Xiphias gladius*. For Sex ratio and sexual maturity variables planned number was achieved only for *Xiphias gladius* because *Thunnus alalunga* is gutted at sea and for *S. sarda* there is no such requirement.

Under sampling for all variables was noticed for the species *Thunnus thynnus* because the fishing period of blue fin tuna was very limited during 2019 (from 11/2/2019 - 23/4/2019) as the quota has been achieved very quickly. No samples were collected for the species *Euthynnus alleteratus and Auxis spp.* as these species are
mainly caught by daytime purse seine, which is a metier that has not been selected for sampling from the ranking system, and it is realised only in a small period of the year (during the species migration).

For *C. hippurus* there was no obligation for sampling according to RCM MED&BS - LP 2016 WP Agreement n.3 recalling PGMed 2014 regional agreement.

**Age**

For the ICCAT species age variable applies only for the species *Sarda sarda, Thunnus alalunga, Thunnus thynnus, Xiphias gladius*. For the species *S.sarda* the target was met. For the species *Thunnus alalunga* and *Thunnus thynnus* MS has no obligation to collect age data according to RCM MED&BS - LP 2016 WP Agreement n.3 recalling PGMed 2014 regional agreement therefore the planned number is zero. For the species *Xiphias gladius* biological data exchange and age readings are performed in the frame of the ongoing "Atlantic and Mediterranean Swordfish Project" of ICCAT.

**EEL**

Under sampling of eel was due to administrative constrains. The proclamation of the project was not done for Western Greece and West Peloponese (EMU1 and EMU2, respectively) resulting in diminished sampling. Nevertheless, an attempt was made to gather additional samples in order to meet the requirements of the project.

- **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.*

The outcomes of the EU project STREAM and ICES WKBIOPTIM will be used to reassess and adapt the planned minimum number of individuals to be measured for the optimization of sampling effort and intensity.

(max. 1000 words per Region/RFO/RFO/IO)
Text Box 1D - Recreational fisheries

General comment: This box fulfills paragraph 2 point (a) (iv) of Chapter III of the multiannual Union programme and Article 2, Article 3 and Article 4 paragraph 1 of the Decision (EU) 2016/1701. 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 probably 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)
Section 1: Biological Data

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

General comment: This box fulfils paragraph 4 of Chapter V of the multiannual Union programme and Article 2 and Article 4 paragraph (3) point (a) of the Decision (EU) 2016/1701.

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 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 diary 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.

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

The screening survey (1st phase) of the pilot project was realised also in 2019 for a second time after 2018, in order to achieve more accurate results and to increase the number of participating recreational fishermen (RF) for the second phase of the survey. The survey evolved as planned and no deviations were recorded. The sample consisted of a stratified selection of RDD phone numbers nationwide (including rural areas and islands). The first survey was conducted in June 2018 with 5,516 interviews, while the second survey was conducted in July 2019 with 16,501 interviews of males and females aged 15+. Surveys employed up to 42 interviewers and 3 supervisors. Quality checks were applied up to the 22% of interviews which were checked through simultaneous listening and 100% electronically.

Final results suggest that 8% (9% in 2018) engaged in recreational fishing in the previous 12 months. Regarding avidity 53% went for fishing 1-5 times/year, 17% 6-10 times/year, 14% 11-25 times/year and 9% 26-50 times/year. On average they fish 16 times/year (median 5 times/year).

Three modes of fishing were identified a) fishing from the shore, b) fishing from a boat and c) spearfishing. The most common way of fishing is from the shore 63% and 37% from boat, both using line or rod, 21% is practicing spearfishing and 11% fishing with longlines from a boat. Obviously, many of the fishermen practicing fishing with more than one way.

Regarding annual catch, 66% catch 0-5 kg/year, 15% catch 6-15 kg/year, 8% 15-30 kg/year, and 5% 31-50 kg/year, and 5% more than 50 kg/year. The average total annual catch is 13 kg (median 3 kg/year).

Sparidae are the most common catches: S. aurata (26%), D. annularis (16%), D. sargus (16%), M. cephalus, (12%), O. vulgaris (11%), D. labrax (10%), P. erythrinus (9%).

The diary survey (2nd phase) of the pilot study was commenced immediately after the screening survey was completed. 127 fishermen from the first screening survey in 2018 and 400 fishermen from the 2nd screening survey in 2019 from all three modes of fishing, shared their personal data in order to participate in the study and agreed initially to participate. However only 92 (17%) actually participated from both surveys reporting 352 trips in total (124 shore, 165 boat, 63 spearfishing) from 24 prefectures of the country. In total 83 species were recorded all together in the fishermen’s reported trips.

During 2019 the two institutes conducted an on-site sampling survey in three selected areas in order to record in situ recreational fishing, from all recorded modes of fishing. Coasts, piers and ports in the North Aegean and Ionian Sea were covered by the FRI. Saronicos Gulf was covered by the HCMR.

Four seasonal trips were conducted in all areas. Two weekdays and a weekend on a 24-hour basis were covered in each, in an effort to record catches from all three modes of fishing. In total 2080 fishing trips were recorded, 853 of them in the North Aegean (728 Shore, 107 boat, 12 Spearfishing), 768 in the Ionian Sea (593 Shore, 167 boat, 5 Spearfishing) and 459 in the Saronicos Gulf (374 Shore, 68 boat, 17 Spearfishing). In total 82 different species/taxa were recorded in the northern Aegean, 84 in the Ionian Sea and 60 in Saronikos Gulf.

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

The research achieved its original goals without major deviations while identifying shortcomings and areas that need more effort to yield greater results.

The lack of a register and/or fishing licenses for both residents and non-resident RF, in combination with the tightening of the legal framework for the acquisition of personal data makes it difficult to identify amateur fishermen restricting therefore their cooperation with the research agencies.
This is especially noticeable in locating spearfishers - having in mind the nature of the activity - and results in very few recordings of this mode of fishing. Equally difficult is the reduction to the total of tourists/non residents.

Efforts should be made to achieve a culture of collaboration between RF community and increase therefore the rate of their voluntary participation in the research of this type during regular sampling.

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

For the period 2020-2021 the pilot study will continue with the aim to incorporate in the sampling frame a greater number of areas to be sampled in order to strengthen the representativeness of the sample and therefore the accuracy of the results, but also to advertise in a direct way the effort of monitoring and at the same time to strengthen the culture of participation in RF community throughout the country.

(max 900 words)
 SECTION 1: BIOLOGICAL DATA

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 multiannual Union programme and Article 2 of the Decision (EU) 2016/1701.

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, 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 all EMUs, 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 Axelooos 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 recruitment 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)

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: Due to administrative constrains the proclamation of the project was not done for Western Greece and West Peloponnese (EMU1 and EMU2, respectively) resulting in diminished sampling. Only effort and landings were collected in EMU1 and EMU2. Nevertheless, an attempt was made to gather additional samples in order to meet the requirements of the project. In total 67% of the samples required by the WP was achieved.

Fisheries Independent data

Yellow eels: In 2019 a new fyke net traps system for estimating the abundance of yellow eels, were purchased and used in the estuarine system of Vistonida and the first data on the yellow eel abundance were gathered.
Since capturing yellow eels was successful with this type of fyke nets, sampling will continue also in 2020. Additional traps will be purchased for use in the rest of EMUs 1 and 2.

**Glass eels:** During the past two years various types of fishing gears were used for the capture of glass eels. Despite the extensive effort to capture glass eels, no individuals were captured. This failure is a result of either the fishing gear used or the abundance of glass eels is so low that it is not easy to capture them. The efforts to capture glass eels will not continue in 2020.

(max 500 words per Area)
### 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).

In accordance with the recommendation 5 of the RCG Med&BS 2017, during 2019 Greece recorded the incidental by-catch of Protected Endangered and Threatened (PET) species by on-board observers from set and drifting longlines. The number of trips in which observers have been instructed to look for bycatch during 2019 for the set longlines were 156 in GSA22, 72 in GSA20 and 18 in GSA23. For the drifting longlines observers have been instructed to look for bycatch in 76 trips from all GSAS.

In GSA22, no single mammal, bird or reptile incidental by-catch was recorded in the entire sample. In GSA22, Greece recorded two Chondrichthyes PET species in longlines, *Gymnura altavela* (3 specimens) and *Mustelus mustelus* (7 specimens). Finally, 5 specimens of *Epinephelus marginatus* were caught. In GSA20, three species of Chondrichthyes PET species were found: *Mustelus mustelus* (2 specimens), *Squalus acanthias* (3 specimens) and *Centrophorus granulosus* (3 specimens). One *Hippocampus hippocampus* and five *Epinephelus marginatus* were also found. Finally, in GSA 23 five specimens of *E. marginatus* were caught in longlines in 2019.

### 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

There were no deviations from what was planned in the WP

### 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

Member States shall provide information on sampling protocols and sampling design for incidental by-catch data collection.

To record the incidental by-catch of PET species, Greece has adopted the sampling protocols provided by MARE/2014/19 project. These protocols are dedicated to specific marine species groups, namely fish, sharks &
rays (Protocol 2), cetaceans (Protocol 3) and sea turtles (Protocol 4). Additional to the MARE/2014/19 protocols, one dedicated to birds (Protocol 5 see Annex I) has been also designed and applied. These protocols, apart from the standard data collection measurements, require the recording of a series of additional information, such as several species-specific body size measurements, weight, sex determination, the estimation of the condition of the by-caught specimen etc.

Moreover, 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 longlines, 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)

References

(max 900 words)
Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem

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 implements 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; alternatively 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 resources 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 meter) 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.
(max 900 words)

Brief description of the results obtained (including deviations from planned and justifications as to why if
this was not the case).
Impact of fisheries on marine habitats
Based on the Working Plan 2017-2019 (version 2018), Greece has explored the effect of fisheries on marine
habitats using spatially explicit indicators of the fishing effort. The impact of fisheries on marine habitats was
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 on ERS data, which
are coming from the Integrated Monitoring System of Fisheries Activities (OSPA) of the Ministry of Rural
Development and Food. We focused on the impact of bottom otter trawls (OTB) on marine habitats, due to the
high impact of the gear on the seabed as well as on the purse seines (PS). The analyses were based on the 2018
data since these were the most recent available.
Through the combination of VMS and ERS data and by using speed profiling techniques, we singled out the fishing VMS pings from those related to the trips of the vessel. To estimate the spatial distribution of the fishing effort, we calculated fishing point density on a 1km x 1km grid. On the heat map of Figure 1F1, the annual spatial distribution of Greek OTB fishing effort for 2018 is depicted. To evaluate the temporal fluctuation of fishing effort, corresponding heat maps per month were produced. Finally, DCF ecosystem indicators 5 and 6 were calculated per month and per statistical rectangle (GFCM Statistical grid). All the above analyses were performed in the R programming environment. Among others, the VMSbase R package, a software devised to manage, process and visualize VMS fishing vessels activity information (Russo et al., 2014) was used.

![Figure 1F1](image-url)

**Figure 1F1.** The annual spatial distribution of Greek OTB fishing effort for 2018. Fishing effort is estimated as fishing point density (fishing pings per km$^2$)

**Impact of fisheries on marine biological resources and ecosystems**

Following the indication and methodology described in the workshop organized by the Regional Coordination Group for the Mediterranean and Black Sea (RCG-Med&BS) on sampling, processing and analyzing the fish stomach contents WKSTCON ICES Workshop (2018) in Palma de Mallorca (24-27 April 2018) the Fisheries Research Institute of Kavala (Greece) performed a pilot study on hake (*Merluccius merluccius*) in the GSA 22 during summer 2019. Samples were collected during the MEDITS trawl survey (Mediterranean International Bottom Trawl Survey) Totally 100 individuals were processed for stomach content analysis, selected by 10 cm size classes by GSA, by adjusting the number of individuals for each size class depending on the size range. The stomach contents were analysed with the methodology proposed by the EU MARE/2014/19.

In respect to size classes, the stomachs of the fish came from 6 length classes as following. Three stomachs were taken from 0-99mm length class, 29 from 100-199mm, 31 from 200-299mm, 32 from 300-399mm, 3 from 400-499mm and 2 from 500-599mm. Due to the rarity of individuals with marginal lengths, we were able to collect >25 specimens only for the length classes between 100 and 400 mm. Two of the stomachs were inverted, corresponding to only 2% of the collected samples. The Vacuity Index (VI=Empty stomachs/Total sample) of the
sample, indicated that 36.7% of the non-inverted stomachs was empty. A total of 78 different trophic items were identified belonging to different taxonomic groups. Osteichthyes was found at the 50% of the samples, while Crustacea and Cephalopoda 49% and 1% respectively.

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

Based on the outcomes of the first year of the pilot study, the objectives set were achieved. A second annual VMS and ERS dataset (2019) will allow us to explore interannual trends on spatiotemporal distribution of fishing effort. As far as the analysis of the stomach content is concerned, the samples can be easily collected on board by the personnel employed for the MEDITS trawl survey every year as well as Data Collection Framework, because the sampling is not excessive. Further training on stomach content analysis is needed, as the species identification is a limiting factor.

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

The duration of the pilot study is 36 months (2018–2020). Based on the final outcomes, the incorporation of results from pilot study into regular sampling will be decided at the end of the pilot study.

References

SECTION I: BIOLOGICAL DATA

Text Box 1G: List of research surveys at sea

MEDIAS

General comment: This box fulfills Chapter IV of the multiannual Union programme and Article 2 and Article 7 paragraph (3) of the Decision (EU) 2016/1701. It is intended to specify which research surveys at sea set out in Table 10 of the multiannual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 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 (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).
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 owned 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.**
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 70 pre-defined transects in the northern Aegean Sea during June-July 2019 (Fig. 1G1) 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 30979 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, 17 pelagic trawls were held along transects in the positions of high fish concentrations.

Hydrographic parameters were recorded over a grid of 136 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 took place at a grid of 136 sampling stations in northern Aegean Sea (Fig 2).

**Fig. 2.** Acoustic transects sampled in the MEDIAS survey of the Hellenic part of northern Aegean Sea (GSA 22) in June-July 2019. The position of CTD and plankton 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 2019.

**Fig 4.** The distribution of the anchovy NASC (m²/nm²) per EDSU of northern Aegean Sea (GSA 22) in June-July 2019.

**Fig 5.** The distribution of the sardine NASC (m²/nm²) per EDSU in northern Aegean Sea (GSA 22) during June-July 2019.
Fig 6. The distribution of the anchovy biomass (t) per EDSU in northern Aegean Sea (GSA 22) during June-July 2019.

Fig 7. The distribution of the sardine biomass (t) per EDSU Hellenic part in northern Aegean Sea (GSA 22) during June-July 2019.

Fig 8. The catch compositions of the hauls (species kg/haul) weighted per hauling hour in northern Aegean Sea (GSA 22) during June-July 2019.
The size and the geographic distribution of anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) stocks in eastern Ionian Sea (GSA 20) 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 48 pre-defined transects in the eastern Ionian Sea during October 2019 (Fig. 1G1) 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 10525 Km² in eastern Ionian 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, 11 pelagic trawls were held along transects in the positions of high fish concentrations.

Hydrographic parameters were recorded over a grid of 84 sampling stations in eastern Ionian 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 took place at a grid of 84 sampling stations in eastern Ionian Sea (Fig 2).

**Fig 9.** Acoustic transects sampled in the MEDIAS survey of the Hellenic part of Ionian Sea (GSA 20) in October 2019. The position of CTD and plankton stations sampled are also shown.

Maps related to the acoustic samples of the MEDIAS survey in Hellenic part of eastern Ionian Sea (GSA 20) are presented below:
Fig 10. The distribution of the total fish NASC (m$^2$/nm$^2$) per EDSU in eastern Ionian Sea during October 2019.

Fig 11. The distribution of anchovy NASC (m$^2$/nm$^2$) per EDSU in eastern Ionian Sea during October 2019.

Fig 12. The distribution of sardine NASC (m$^2$/nm$^2$) per EDSU in eastern Ionian Sea during October 2019.
Fig 13. The distribution of anchovy biomass (t) per EDSU in eastern Ionian Sea during October 2019.

Fig 14. The distribution of sardine biomass (t) per EDSU in eastern Ionian Sea during October 2019.

Fig 15. The catch compositions of the hauls (species kg/haul) weighted per hauling hour in eastern Ionian Sea during October 2019.
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, MEDITIS 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 2019 will be found at [http://www.medias-project.eu/medias/website/](http://www.medias-project.eu/medias/website/) of the MEDIAS coordination group after the Steering Committee meeting in 2019. The meeting is currently postponed due to the COVID-19 situation restrictions.

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 2019:

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 northern Aegean Sea per length class based on the results of the acoustic survey in 2019.

<table>
<thead>
<tr>
<th>Length class</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>229</td>
<td>0.09</td>
</tr>
<tr>
<td>55</td>
<td>114</td>
<td>0.09</td>
</tr>
<tr>
<td>65</td>
<td>114</td>
<td>0.15</td>
</tr>
<tr>
<td>75</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>85</td>
<td>4 765</td>
<td>14.67</td>
</tr>
<tr>
<td>95</td>
<td>240 024</td>
<td>1 055.48</td>
</tr>
</tbody>
</table>

Table 3. Biomass estimation of anchovy in Aegean Sea per length class based on the results of the acoustic survey in 2019.
<table>
<thead>
<tr>
<th>Age</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5 223</td>
<td>15.00</td>
</tr>
<tr>
<td>1</td>
<td>2 058 401</td>
<td>14 721.10</td>
</tr>
<tr>
<td>2</td>
<td>295 748</td>
<td>3 555.04</td>
</tr>
<tr>
<td>3</td>
<td>2 486</td>
<td>42.42</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Sum</td>
<td>2 361 858</td>
<td>18 333.56</td>
</tr>
</tbody>
</table>

**Table 4.** Biomass estimation of anchovy in Aegean Sea per age class based on the results of the acoustic surveys in 2019.

<table>
<thead>
<tr>
<th>Length class</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>828</td>
<td>1</td>
</tr>
<tr>
<td>65</td>
<td>4 140</td>
<td>7</td>
</tr>
<tr>
<td>75</td>
<td>13 049</td>
<td>36</td>
</tr>
<tr>
<td>85</td>
<td>55 742</td>
<td>229</td>
</tr>
<tr>
<td>95</td>
<td>234 321</td>
<td>1 385</td>
</tr>
<tr>
<td>105</td>
<td>407 016</td>
<td>3 337</td>
</tr>
<tr>
<td>115</td>
<td>131 917</td>
<td>1 457</td>
</tr>
<tr>
<td>125</td>
<td>232 545</td>
<td>3 373</td>
</tr>
</tbody>
</table>

**Table 3.** Biomass estimation of sardine in Aegean Sea per length class based on the results of the acoustic survey in 2019.
Table 4. Biomass estimation of sardine in Aegean Sea per age class based on the results of the acoustic surveys in 2019.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>818 598</td>
<td>6 207.77</td>
</tr>
<tr>
<td>1</td>
<td>1 172 327</td>
<td>21 527.47</td>
</tr>
<tr>
<td>2</td>
<td>53 157</td>
<td>1 062.61</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Sum</td>
<td>2 044 082</td>
<td>28 798</td>
</tr>
</tbody>
</table>

For the non target species:
- Length-Weight relationships (where an adequate number of samples is available)
- Length frequency distributions

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Ionian Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchovy (Engraulis encrasicolus)</td>
<td>TW = 1E-06*TL^3.3215</td>
</tr>
<tr>
<td>Sardine (Sardina pilchardus)</td>
<td>TW = 8E-07*TL^3.4736</td>
</tr>
<tr>
<td>Round sardine (Sardinella aurita)</td>
<td>TW = 6E-06*TL^3.0513</td>
</tr>
<tr>
<td>Mediterranean horse mackerel</td>
<td>TW = 1E-05*TL^2.9278</td>
</tr>
<tr>
<td>Mediterranean mackerel (Trachurus mediterraneus)</td>
<td>TW = 3E-06*TL^3.2022</td>
</tr>
<tr>
<td>Bogue (Boops boops)</td>
<td></td>
</tr>
</tbody>
</table>

Ionian Sea (GSA 20) MEDIAS survey

The following abundance estimates and indices are presented below and will be provided to the DCF for GSA 20 in 2019:

For anchovy and sardine:
- Number of individuals/age/
- Biomass/age/Target species
- Number of individuals/length class
- Biomass/length class/Target species
Table 3. Biomass estimation of anchovy in eastern Ionian Sea per length class based on the results of the acoustic survey in 2019.

<table>
<thead>
<tr>
<th>Length class</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>26 901</td>
<td>24</td>
</tr>
<tr>
<td>65</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>75</td>
<td>275 441</td>
<td>581</td>
</tr>
<tr>
<td>85</td>
<td>2 866 696</td>
<td>8 621</td>
</tr>
<tr>
<td>95</td>
<td>1 879 608</td>
<td>7 752</td>
</tr>
<tr>
<td>105</td>
<td>367 163</td>
<td>2 012</td>
</tr>
<tr>
<td>115</td>
<td>12 854</td>
<td>91</td>
</tr>
<tr>
<td>125</td>
<td>34 522</td>
<td>310</td>
</tr>
<tr>
<td>135</td>
<td>93 558</td>
<td>1 046</td>
</tr>
<tr>
<td>145</td>
<td>14 874</td>
<td>204</td>
</tr>
<tr>
<td>155</td>
<td>29 748</td>
<td>493</td>
</tr>
<tr>
<td>Sum</td>
<td>5 601 363</td>
<td>21 134.02</td>
</tr>
</tbody>
</table>

Table 4. Biomass estimation of anchovy in eastern Ionian Sea per age class based on the results of the acoustic surveys in 2019.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>847 168</td>
<td>2 366.54</td>
</tr>
<tr>
<td>1</td>
<td>4 616 016</td>
<td>17 024.63</td>
</tr>
<tr>
<td>2</td>
<td>138 179</td>
<td>1 742.85</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Sum</td>
<td>5 601 363</td>
<td>21 134.02</td>
</tr>
</tbody>
</table>
Table 3. Biomass estimation of sardine in eastern Ionian Sea per length class based on the results of the acoustic survey in 2019.

<table>
<thead>
<tr>
<th>Length class</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>57 171</td>
<td>241</td>
</tr>
<tr>
<td>95</td>
<td>226 392</td>
<td>1 351</td>
</tr>
<tr>
<td>105</td>
<td>399 318</td>
<td>3 258</td>
</tr>
<tr>
<td>115</td>
<td>545 533</td>
<td>5 912</td>
</tr>
<tr>
<td>125</td>
<td>232 386</td>
<td>3 267</td>
</tr>
<tr>
<td>135</td>
<td>24 432</td>
<td>437</td>
</tr>
<tr>
<td>145</td>
<td>1 227</td>
<td>27</td>
</tr>
<tr>
<td>155</td>
<td>11 521</td>
<td>317</td>
</tr>
<tr>
<td>Sum</td>
<td>1 497 979</td>
<td>14811.29</td>
</tr>
</tbody>
</table>

Table 4. Biomass estimation of sardine in eastern Ionian Sea per age class based on the results of the acoustic surveys in 2019.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of individuals</th>
<th>Biomass (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>489 215</td>
<td>3 658.21</td>
</tr>
<tr>
<td>1</td>
<td>996 784</td>
<td>10 825.78</td>
</tr>
<tr>
<td>2</td>
<td>11 981</td>
<td>327.31</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Sum</td>
<td>1 497 979</td>
<td>14811.29</td>
</tr>
</tbody>
</table>

For the non target species:

- Length–Weight relationships (where an adequate number of samples is available)
- Length frequency distributions
Table 5. Length-Weight relationships (TW (gr)- TL (mm)) for the main species in eastern Ionian Sea.

<table>
<thead>
<tr>
<th>Species</th>
<th>Ionian Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchovy (<em>Engraulis encrasicolus</em>)</td>
<td>(TW = 1E-05*TL^2.8151)</td>
</tr>
<tr>
<td>Sardine (<em>Sardina pilchardus</em>)</td>
<td>(TW = 1E-06*TL^3.351)</td>
</tr>
<tr>
<td>Round sardine (<em>Sardinella aurita</em>)</td>
<td>(TW = 6E-06*TL^3.0513)</td>
</tr>
<tr>
<td>Mediterranean horse mackerel (<em>Trachurus mediterraneus</em>)</td>
<td>(TW = 1E-05*TL^2.9278)</td>
</tr>
<tr>
<td>Bogue (<em>Boops boops</em>)</td>
<td>(TW = 3E-06*TL^3.2022)</td>
</tr>
</tbody>
</table>

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

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 2019. No deviation regarding the area covered or the sampling stations occurred.

(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 multiannual Union programme and Article 2 and Article 7 paragraph (3) of the Decision (EU) 2016/1701. It is intended to specify which research surveys at sea set out in Table 10 of the multiannual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 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 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:


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

Participating member states are Greece, Spain, Italy, France, Croatia, Malta, Cyprus. Details for the vessels used for the surveys by member state are described in the MEDITS manual.
Medit 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 apply (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 2019 without any deviation following the methodology described in the latest MEDITS manual.

Fig. 1G.2.1. Sampling stations (spots) accomplished during the 2019 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 has been postponed due to the COVID-19 pandemic.

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 multiannual Union programme and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of the Decision (EU) 2016/1701. 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.

<table>
<thead>
<tr>
<th>1. Description of methodologies used to cross-validate the different sources of data.</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Data on 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 derive from EU Legislation according to vessel size.</td>
</tr>
<tr>
<td>Fishing vessels &gt;12m are required to use satellite-based Vessel Monitoring System (VMS), and electronic report system (ERS*); including vessels &lt;12m that acquire special fishing permits for large pelagics, BFT, albacore and swordfish as well as boat seines; 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 &lt;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).</td>
</tr>
<tr>
<td>Therefore, for vessels &gt;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.</td>
</tr>
<tr>
<td>For vessels &lt;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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Description of methodologies used to estimate the value of landings.</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Description of methodologies used to estimate the average price (it is recommended to use weighted averages, trip by trip)</th>
</tr>
</thead>
</table>
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 \( n_0 = \frac{s^2 \cdot \bar{x}^2}{e^2} \), 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). In such cases, the adjusted sample size (\( n_{adj} \)) 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:
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.
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.

Validation of the >12 m part of the fleet has not yet taken place.
Actions to avoid deviations.
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 cases. MS will try to eliminate low response rates in the next reporting period. The extreme response rate that is reported for one segment (Demersal Trawlers and/or demersal seiners, 6-< 12 m) is justified in the corresponding AR comments cells.

*(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 multiannual Union programme and Article 2, Article 4 paragraphs (1), (2) and (5) and Article 5 paragraph (2) of the Decision (EU) 2016/1701. It is intended to specify data to be collected under Tables 5(A) and 6 of 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 14,934 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)

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.
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 collection 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 form 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 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

http://www.alicia.minagric.gr/sites/default/files/basicPageFiles/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203.pdf and


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. Moreover, 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;


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

http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203.pdf and


(max 1000 words)
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 multiannual Union programme and Article 2 and Article 3 paragraph (3) point (c) of the Decision (EU) 2016/1701. It is intended to specify data to be collected under Table 6 of 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 multiannual 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 characteristics 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 triennially 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”.

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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). It 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 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.

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 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).

For the above reason, 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 v.3 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.


(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 multiannual Union programme and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of the Decision (EU) 2016/1701. It is intended to specify data to be collected under Tables 6 and 7 of 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

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 (constit 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, Hatcherries 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 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 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 nature of the aquaculture sector, 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
(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 2017-2019” version 2018. 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 implementation of the survey schedule.

10.2. Accuracy and reliability

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

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).

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.

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 methodologies have been uploaded and are available on the Fisheries Research Institute web site of ELGO
Demeter (Ministry of Rural Development and Food), in the data collection section. The link is

Link: http://www.alieia.minagric.gr/sites/default/files/basicPageFiles/Data_Quality_Aquaculture.pdf and

The Integrated Monitoring System of Fisheries Activities (OSPA), operating under Ministry of Rural
Development and Food, that is used for data cross checking and validation can be found in the following link

Link: http://portal.alieia.minagric.gr/wps/portal/fishing# (max 1000 words)
### Pilot Study 4: Environmental data on aquaculture

**General comment:** This box fulfills paragraph 6 point (c) of Chapter III of the multiannual Union programme and Article 2 and Article 4 paragraph (3) point (d) of the Decision (EU) 2016/1701. It is intended to specify data to be collected under Table 8 of the multiannual Union programme.

<table>
<thead>
<tr>
<th>1. Aim of pilot study</th>
</tr>
</thead>
<tbody>
<tr>
<td>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). Our concern is that inclusion of mortality and antibiotics data within the survey could compromise response rates.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Duration of pilot study</th>
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<tbody>
<tr>
<td>The duration of the pilot study will be two years starting from 2018.</td>
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</table>

<table>
<thead>
<tr>
<th>3. Methodology and expected outcomes of pilot study</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Achievement of the original expected outcomes of pilot study and justification if this was not the case.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The preliminary results of the pilot study showed that all companies were reluctant to provide antibiotics data while 50% of the sample (20% of the sector’s largest companies) provided only mortality data. The companies that were not reluctant to provide the data are the ones that were either participated in various research or funding programs or were in the process of compensation due to mortalities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Incorporation of results from pilot study into regular sampling by the Member State.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on the preliminary results of the pilot study, only mortality data can be incorporated into regular sampling since it was the only type of data collected during the pilot study. It is estimated that the aquaculture medicines data can be collected directly from national authorities responsible for the monitoring of aquaculture medicines application and usage.</td>
</tr>
</tbody>
</table>

For 2020-21 period a 4th topic regarding the mortality and antibiotics data will be inserted in the questionnaire used and will be sent to all companies in the sector. According to the results arising from the survey, we will change accordingly the methodology and 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 fulfils footnote 6 of paragraph 1.1(d) of Chapter III of the multiannual Union programme, Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of Decision (EU) 2016/1701. It is intended to specify data to be collected under Table 11 of 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.

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 followed 2009, 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 processed products. 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 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) business and 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 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)

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 collection 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 2017-2019” version 2018. 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 implementation 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 methodologies have been uploaded and are available on the Fisheries Research Institute web site of ELGO Demeter (Ministry of Rural Development and Food), in the data collection section. The link is


(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 Decision (EU) 2016/1701 and forms the basis for the fulfillment of paragraph 2 point (a)(i) of Chapter III of the multiannual Union programme. This Table refers to data to be collected under Tables 1(A), 1(B) and 1(C) of 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 Decision (EU) 2016/1701

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 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_LP.F.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 are 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 1B 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)

Deviation from the sampling plan according to Article 5 paragraph (3) of the 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 realized. In three cases (OTB, FPO and SB in GSA 22) slight under sampling was noticed (however the achievement was >80%) and in some cases there was oversampling in order to achieve the higher possible coverage of length distributions of the main species, and to obtain as much samples as possible for the calculation of the other biological variables.

There was no deviation in the methodology used for collecting data nor in the methods used for estimating the parameters. The procedure described in NWP was followed.

The unsampled métiers in Greece include various fishing activities performed sporadically and/or locally. These métiers are used only by ~3% of the national fishing fleet, while the total aggregated effort attributed to them is estimated to ~5%. As a result, these métiers are not included in the sample for biological variables, since they do not meet the criteria set by the applied ranking system (Commission Decision 2010/93/EU) for métier selection. Nevertheless, effort data for these métiers are collected annually, following the same sampling scheme applied for all the other strata.

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.

Although there were no major deviations the MS will try to adjust them in the future

(max. 1000 words per region OR fishing ground)
SECTION 5: DATA QUALITY

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 Decision (EU) 2016/1701. This box is intended to specify data to be collected under Tables 1(A), 1(B) and 1(C) of the multiannual Union programme. Use this box to provide additional information on Table 5A.

<table>
<thead>
<tr>
<th>1. Evidence of data quality assurance</th>
</tr>
</thead>
</table>

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 constraints and/or the steps taken to fulfil this obligation. In the cases where a reference document 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.

Information on the methodology used to assure the quality of the data collected for the biological sampling is reported in Table 5A, where the web links to the reference documents are also provided.

<table>
<thead>
<tr>
<th>2. Sampling design</th>
</tr>
</thead>
</table>

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

A public document on the sampling design is available and the link is provided in Table 5A.

<table>
<thead>
<tr>
<th>3. Sampling implementation</th>
</tr>
</thead>
</table>

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

MS indicated “Y” in Table 5A.

<table>
<thead>
<tr>
<th>4. Data capture</th>
</tr>
</thead>
</table>

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

MS indicated “Y” in Table 5A. A public document on the QAF is available and the link is provided in Table 5A.

<table>
<thead>
<tr>
<th>5. Data Storage</th>
</tr>
</thead>
</table>

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.

All data are stored in the national data base.

<table>
<thead>
<tr>
<th>6. Data processing</th>
</tr>
</thead>
</table>

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

The quality assurance framework that is currently applied to data collection scheme is documented and regularly updated. Additionally, in the frames of the Action Plan that has been set up for Greece, a Quality
Assessment Working Group has been formed dedicated to quality assessment and assurance on data processing. Based on the recommendations of the Working Group, all the necessary actions to improve the quality of the provided data will be taken and documented.

(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 Decision (EU) 2016/1701. This box is intended to specify data to be collected under Tables 5(A), 6 and 7 of the multiannual Union programme. Use this box to provide additional information on Table 5B.

<table>
<thead>
<tr>
<th>Evidence of data quality assurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>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”.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

#### 1. Section P3 Impartiality and objectiveness

MS indicates “Y” in both questions regarding Section P3.

#### 3. Section P4 Confidentiality

MS indicates “Y” in all three questions regarding Section P4.

#### 4. Section P5 Sound methodology

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, SGCA09-02 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](www.agreri.gr/sites/default/files/projects/Methodology%20and%20Quality%20Report_Greek%20Fishing%20Fleet_English%20Version%203%20%281%29.pdf))

and


#### 5. Section P6 Appropriate statistical procedures

In one out of four questions, the reply of the MS is “N” and specifically in question: “Is there consistency between administrative and other statistical data?” According to Moura (2016), documentation about administrative and
statistical processes should exist, describing the differences between administrative and statistical processes regarding definitions, concepts, coverage, etc. Possible differences in concepts will be thoroughly studied, and measures to deal with these differences will be taken, if necessary. This documentation is still under construction.

Documented revisions are available at:  http://agreri.gr/en/node/93

6. Section P7 Non-excessive burden on respondents
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
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. Construction of this database will be finalized by the end of the Work Plan.

8. Section P9 Relevance
End users are already listed and updated

9. Section P10 Accuracy and reliability
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. Moreover, 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:  

10. Section P11 Timeliness and punctuality
MS indicates “Y” in the question regarding Section P11

11. Section P12 coherence and comparability
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

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)
SECTION 5: DATA QUALITY

Text Box 5B: Quality assurance framework for socioeconomic data

Aquaculture/Processing

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

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.

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

MS indicates “Y” in all questions regarding Section P5.

The data collection methodology follows the National Work Plan 2017-2019 (version 2018) 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.

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

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 2017-2019.

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 for 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
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 implementation 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
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 implementation of the survey schedule and avoid possible errors. Any errors are recorded and actions to avoid them are decided during the meetings.

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 2017-2019 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 methodologies have been uploaded and are available on the Fisheries Research Institute web site of ELGO Demeter (Ministry of Rural Development and Food), in the data collection section. The link is Link: https://inale.gr/national-fishing-data-collection-program_el/

The Integrated Monitoring System of Fisheries Activities (OSPA), operating under Ministry of Rural Development and Food, that is used for data cross checking and validation can be found in the following link
Link: http://portal.alieia.minagric.gr/wps/portal/fishing#

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