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

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

Commission Implementing Decision (EU) 2019/909 of 18 February 2019

establishing the list of mandatory research surveys and thresholds for the purposes of the multiannual Union programme for the collection and management of data in the fisheries and aquaculture sectors

Commission Delegated Decision (EU) 2019/910 of 13 March 2019

establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sectors

Commission Implementing Decision (EU) 2016/1701 of 19 August 2016

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 of 24 August 2018

laying down rules on the format and timetables for the submission of annual data collection reports in the fisheries and aquaculture sectors.

Italy - Annual Report for data collection in the fisheries and aquaculture sectors

2020

Version 2

[Rome, 14st December 2021]

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SECTION 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, of the Annex of the Delegated Decision (EU) 2019/910 and Chapter I of the Implementing Decision (EU) 2019/909 on the multiannual Union programme; and Article 2, Article 4 paragraph 1 and Article 8 of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is applicable to the Annual Report.

MEDITERRANEAN SEA

1. Evidence of data quality assurance

The "Guidelines for the biological data collection of the National Work Plan for data collection" were used as reference in the sampling process of the commercial catch. These guidelines are available on the Italian DCF website (<http://dcf-italia.cnr.it/>). In addition, the following complementary documentation was considered (available at <http://www.fao.org/gfcm/publications/en/> and at <https://datacollection.jrc.ec.europa.eu/docs/regional-grants/>):

- the outputs of the grants MARE14_19 and STREAM as regards the quality checks;
- GFCM, 2018. GFCM Data Collection Reference Framework (DCRF). Version: 20.1.
- FAO. 2019. Monitoring discards in Mediterranean and Black Sea fisheries: Methodology for data collection. Technical Paper No. 639.
- Handbook on fish age determination: a Mediterranean experience (Carbonara and Follesa, FAO, 2019);
- Atlas of the maturity stages of Mediterranean fishery resources (Follesa and Carbonara, FAO, 2019).

Furthermore, the results of the working groups, workshops and projects attended by Italian researchers - with expertise in the specific fields related to the different tasks - have been taken into account (see Table 7A.).

Information on the methodology used to assure the quality of the data collected is reported in Table 5A.

Large pelagics: as regards the achievement of the targets provided by the Work Plan, they resulted to be fully achieved for the species swordfish and bluefin tuna, respectively to 119% and 101%. However, for some species it was not possible to achieve the minimum number expected of the measurement of length, for the following reasons:

- dolphinfish (DOL): the number of individuals sampled was lower than expected due to the difficulty of sampling a large number of specimens in a very short fishing period: in fact, most of the catches are concentrated in a very short period of time;
- Albacore (ALB): the number of individuals sampled is lower than expected because the majority of the fishing activity takes place in offshore areas and the landing takes place in non-Italian ports, where it is not possible to program surveys upon landing;
- Istiophoridae (BIL): this is a species caught mainly on an occasional basis so it is unpredictable to carry out sampling;
- *A. rochei* (BLT): it is a species that does not constitute a fishing target, and is therefore only found as an accessory species.
- *A. thazard* (FRI): this species is rarely found in Italian seas.

2. Deviations from the Work Plan

The sampling intensity of the biological variables and the field operations related to the sample collection were impacted by the restrictions due to the COVID_19 pandemic in all the GSAs. The period of lockdown from March to May 2020 allowed the performance of some activities, but not following the usual procedures. It was not possible for scientific observers to embark onboard fishing vessels. This restriction continued almost in every GSA also after the first lockdown period, given the implementation of social distancing rules. For this reason the observations onboard were carried out, where possible, using a self-sampling approach, based on the fishermen collaboration to collecting information on discards. The commercial fraction was sampled as usual almost in all the GSAs. However, given the restrictions to embark, more samples than usual had to be

purchased and subsequently analysed at laboratories. The restrictions of COVID_19 pandemic also impacted the activities at the laboratories due to the restrictions for social distancing. In some Institutes these rules halved the possibilities to using laboratories. Thus, the process of samples' analyses was slowed down. Some differences among the GSAs occur due to the possible different situations at the level of the Regions, given that the rules were limiting the activities in a differentiated manner, depending on the evolution of the pandemic parameters in each Region of Italy.

Despite this difficult situation it has been possible to reach or get close to the target number of samples in several GSAs. Besides the mentioned difficulties due to COVID-19 pandemic, general justifications for deviations from the Work Plan in terms of planned vs. achieved number of samplings are often due to the irregular activity of the fishing sector in this pandemic period (e.g. reduction of the activity/target changes).

It should be noted that for GSA10, GSA16 and GSA17 data are not reported in Table 1C, because laboratory analysis were not finalized and are still ongoing due to the pandemic restrictions for accessing the laboratories since March 2020.

Detailed comments on deviations on particular species/stocks are included in the AR Comments column in Table 1C.

"Under-sampling" was generally due to reduced capture of some species, as for *Engraulis encrasicolus* in GSA9 and 18, *Sardina pilchardus* in GSA18, *Nephrops norvegicus* and Mugilidae in GSA19, while in GSA11 *Merluccius merluccius* was undersampled, despite the effort to reach the target and *Eledone cirrhosa*. In the GSA17 more problematic species, for which the number of samples was below the threshold of 90%, were *Octopus vulgaris*, *Eledone cirrhosa*, *Illex* sp., *Trachurus trachurus*, *Scomber japonicus*, *Mullus surmuletus*.

Null or sporadic captures were reported for some rare species as *Dicentrarchus labrax* and *Lophius piscatorius* in GSA9, the latter also in the GSA11, GSA18 and GSA19, where a low number of individuals occurred in the catches also for *Loligo vulgaris*, *Scomber scombrus* and *Scomber japonicus*. This for reasons linked to the trends of production, but also because it was not possible to make samplings onboard the fishing vessels and to even cover quarters and meters. Furthermore, fishing activity of some selected metiers is concentrated only in a small period of the year and after this period the fleet can change gears and targets species.

"Over-sampling" of some biological variables (e.g. length, but also maturity or sex) may be due to factors, such as i) adequately cover all classes of the length frequency distribution of the species considered; ii) the metier approach; iii) the size of sampled vessels; iv) the seasonality; v) the sampling of substrata at local geographical level (local fisheries) and the vi) concurrent sampling. It should be also considered that the estimate of the number of individuals to be sampled in the WP was based on the observations in the previous three years, but some species showed greater abundance and therefore it was possible to proceed with a more robust sampling.

The overall target number of PSUs planned was fully achieved in the GSAs 9, GSA11, GSA17, GSA18, GSA19. It was close to the target in GSA16, while in GSA10 it was around 80%.

Large pelagics: the survey was carried out both at the ports of landing (normally one per GSA) and with observations on board; furthermore, due to the COVID 19 health emergency, it was often not possible to carry out boardings. Therefore, in an innovative way compared to the past, especially structured forms were delivered to fishermen for direct compilation of data related to the fishing trip. In order to reach the number of individuals foreseen by the program, the number of samplings achieved (294) is higher than the planned (200)..

3. Actions to avoid deviations.

Despite the difficulties occurred during the pandemic period, the results have been achieved with the planned number of samplings fulfilled in several GSAs. In the future, actions will be aimed at ensuring a coverage as consistent as possible with the sampling strategy. Moreover, actions will be taken to mitigate, as far as possible, under and over samplings. Finally, the tools made available by the following projects will be considered for their application also for sampling plans and for sampling optimization: MARE / 2016/22 "Strengthening regional cooperation in the area of fisheries data collection", Annex 1" Biological data collection in EU waters: "Strengthening Regional cooperation in the area of fisheries biological data collection in the Mediterranean and Black Sea, STREAM (SI2.770115)", and the ongoing project "MARE/2020/08 (SI2.705484) - Strengthening regional cooperation in the area of fisheries data collection in the Med & BS-Streamline".

Large pelagics: the survey was carried out both at the ports of landing (normally one per GSA) and with observations on board; furthermore, due to the COVID 19 health emergency, it was often not possible to carry

out boardings. As previously said, the innovative way of sampling, that is to deliver specially structured forms to selected fishermen for direct compilation of data has allowed to achieve the overall target of the foreseen number of samplings (200). There were therefore no deviations from the program.

OTHER REGIONS

1. Evidence of data quality assurance

In 2020, 8 vessels operated outside the Mediterranean waters. 7 vessels operated in the Atlantic Ocean and their activity, targeting mainly cephalopods (OTB_CEP_>=70_0_0), depends on fisheries agreements in place and may vary every year. One single vessel, (PS_LPF_0_0) targeting mainly tuna, operated in the IOTC Region (Indian Ocean FAO 51.7). Available landing and effort data of vessels operating both in the CECAF and IOTC areas are sent to the RCG Long Distance Fishery. Data are also made available through the FDI data call. According to RCG LDF 2018, biological sampling is due only under a SFPA. Considering that the EU fishery, developed in Guinea-Bissau, was closed due to the end of the SFPA UE-Guinea Bissau in November 2017, there was no obligation for Italy for carrying out biological sampling in 2019. As concluded by RCG LDF 2018, only in case that the new SFPA will be signed and the Italian fishery reinitiated, the fishery data should be reviewed for potential sampling by Italy.

2. Deviations from the Work Plan

Not applicable

3. Actions to avoid deviations.

Not applicable

EEL (*Anguilla anguilla*) BIOLOGICAL VARIABLES

1. Evidence of data quality assurance

Activities to be carried out in the first months of 2020 coincided in full with the emergency linked to the COVID-19 pandemic, and this led to considerable delays, inconveniences and problems both in the phase preceding the lockdown (already in month of February) and during the lockdown (period from March to the end of May). These delays concerned both the impossibility of contacting the Regional Administrations, in serious difficulty especially in the Northern Regions (Lombardia, Veneto and Emilia Romagna).

However, since June it was possible to re-establish contacts, and therefore with the support of Regional Administrations of the 9 Eel Management Units it was possible to interview fishermen (both in person and by telephone) and to proceed to samplings. All activities were therefore carried out according to the National Work Plan for data collection. Furthermore, procedures were compared within the EIFAAC/ICES/GFCM Working Group on Eel and with related workshops, taking into account discussions emerged in these expert groups.

2. Deviations from the Work Plan

No deviations from the Work Plan occurred, because the delays mentioned above were overcome by stepping up actions in the months following the lock-down. As part of the monitoring of commercial eel fishing, year 2020, selected sites (Orbetello, Lesina and Comacchio) were identified in EMUs of Tuscany, Puglia and Emilia Romagna respectively, on the basis of the most significant layer (lagoon) in each and of the most representative site (in terms of catches). Samples were gathered randomly from commercial catches for the collection of biological data. Samples of 30 individuals of yellow eel and 30 of silver eel were examined, for a total of 60 individuals / site, as foreseen by the Italian Work Plan for this species. Measurements of size and weight were completed according to the Plan.

3. Actions to avoid deviations.

See above

(max. 1000 words per Region/RFMO/RFO/IO)

SECTION 1: BIOLOGICAL DATA

Text Box 1D - Recreational fisheries

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

LARGE PELAGICS

1. Description of the target population

The species of large pelagics caught by recreational fishing and subject to data collection are reported in Table 1D.

The target population consists of boats potentially dedicated to fishing for large pelagics, identified on the basis of a series of indications (presence of rod holders, divergents, specific stickers of fishermen's organizations, etc.), as according to the pilot study (2004) previously taken as a reference, with subsequent expansion to the current number of species sampled.. Overall, the survey identified a universe of boats potentially dedicated to fishing for large pelagics equal to 2953. The lockdown made it often impossible to have a vis-a vis meetings with the operators to be interviewed and to carry out on the dock surveys, regarding both fishing activities and the recreational and sport fishing fleet. Nevertheless, the surveyors were able to collect at least a good part of the data, both through interviews carried out remotely and through meetings on the dock.

2. Type of survey

Table 1D describes the methodology and the type of survey used.

Information on the methodology used to assure the quality of the data collected is reported in Table 5A. According to the Work Plan 2017-2019, "surveys will be conducted utilizing also a sampling strategy based on a panel of anglers, thereafter sample data will be extrapolated to the whole "universe". The universe will be the official list of recreational fishermen as provided by the Italian Ministry of Agricultural, Food, Forestry and Tourism Policies. Estimation will be based on the availability of this reference universe." However, the reference universe, identified in the Mipaaf database, was not considered appropriate as a basis of the statistical survey (lacking in terms of completeness of the records, few variables related to the activity and type of fishing). Given the specificity of the object of the survey it was therefore not possible to adopt the new methodology as programmed in the National Plan, and it was necessary to refer again to the collection methodology considered in the previous years, i.e. the pilot study reported in the publication: DiNatale et al. Col.Vol.Sci.Pap. ICCAT, 58 (4): 1360-1371 (2005).254 interviews were carried out. The interviews were carried out through monitoring in sample ports, . The interviews have been administered distributing specific questionnaires to a panel of fishermen, identified through visits conducted on randomly selected dates and ports, asking for fishermen found available at the moment of the visits. Data were then recovered, as much as possible, thorough remote connection. This methodology had the aim of giving a first quantitative estimate of the quantities caught and of the percent of catch and release, as requested by EU Map.

3. Data Quality

Information about non-responses and refusals is found in the Work Plan, Table 5A.

4. Data Analysis and processing

Once the population has been defined, by census, on a territorial basis, the port areas have been explored in order to enumerate exhaustively the units present and produce complete lists. A simple random sampling

design was used for the selection of the sample units and the extraction of the primary sampling from the lists according to a random procedure without repetition. The determination of the sample size was defined for a confidence level of 95% and a confidence interval (margin of error) of 4.5%

EEL

1. Description of the target population

For recreational fishing targeting the eel species, the activity in Italy is carried out exclusively in the inland waters (rivers, lagoons, lakes), in the 9 EMUs that have adopted Regional Eel Management Plans.

2. Type of survey

The methodology is based on interviews on a sample basis, with questionnaires requiring data on an annual basis, separately by stage (yellow eel, silver eel) and by fishing gear.

In order to reach a representative sample of anglers and to obtain a sufficient number of interviews for subsequent expansions, the collaboration of Regional Administrations was requested, and the involvement of sport fishing associations, in order to obtain contacts of sport fishermen involved in recreational eel fishing.

3. Data Quality

All methodological activities for catch monitoring, for data processing, for evaluation of effort parameters were conducted with reference to the provisions of the Work Plan. Information on the methodology used to assure the quality of the data collected is reported in Table 5A.

4. Data Analysis and processing

Estimate of the total amount of eel recreational fishers were obtained on the basis of licenses released by the Regional Administrations and checked against the information provided by various recreational fishers organizations. The survey allowed to collect information related to eel recreational fishing in terms of gears used, periodicity and consistency of catches. To assess the Catch Per Effort Unit (CPUS) an average of the kg of eel caught was calculated. The results are presented reported by EMU and habitat type.

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

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

1. Aim of pilot study

According to EU Reg. 1004/2017, “recreational fisheries’ means non-commercial fishing activities exploiting marine biological resources for recreation, tourism or sport”. This definition will be considered for the aim of the present pilot study.

The main aim of the pilot study is to assess the share of catches from recreational fisheries in relation to commercial catches for all species for which catch estimates are required under this work plan. The final outcomes of the pilot study will be discussed at marine region level and will propose a design to extent for future national surveys of recreational fisheries. Other objectives of the pilot study are:

a) to better tune and partially modify the methodology previously implemented during the first phase in 2018-2019

b) to determine the number of recreational fishermen, cross-checking and integrating the current list of registered fishermen (Mipaaf Database); to monitor fishing activity in terms of gears/equipment used and time dedicated to this activity; to collect some basic information on recreational catches (species, weight and number), including some important species for the recreational fishing only; to collect macro-data on the overall economic impact of the activity.

c) to supply this data as requested by the Commission Implementing Decision (EU) 2019/909 “Member States shall provide catch estimates from existing recreational fishery surveys, including those carried out under the Data Collection Framework or from an additional pilot study, within two years from the date on which this Decision takes effect”.

2. Duration of pilot study

The First phase of pilot study was implemented in 2018-2019, the second phase was implemented during the second half of 2020 and will be concluded in 2021. Methodology and expected outcomes of pilot study

The pilot study was articulated in 2 Phases:

I Phase (2018-2019)

- Step 1. Analysis and validation of the Register of fishermen of the Ministry of Agricultural, Food and Forestry Policies (Min.Decr. 6 Dec 2010)
- Step 2. Estimation of variables of interest through: Expert interviews (elicitation techniques); Sample survey at national scale

Some constraints carrying out the first phase has suggested to implement a new sample design

A second phase (2020-2021) was then proposed to tune and implement the methodology previously adopted, in view of a final proposal for a routine survey in the new EU Map

II Phase (2020-2021)

- I step - Telephone survey (2020)
- II step - Sample survey (2021)

The first step was a telephone survey to a sample of families, stratified according to population density and extension of the coastline of the corresponding region. The telephone survey had the aim of collecting some key information on recreational activity (practice of the activity yes/no, possible registration in the Mipaaf database, area and season of fishing etc.).

On the base of the results of the first phase, on a panel of available anglers casually selected, the second phase will consist on the distribution of a monthly logbook, for a whole fishing season, for the estimation of catches, fishing effort, and other accessory information.

The design of the questionnaire will follow the guidelines and glossary developed by the ICES WGRFS. The GFCM “Handbook for recreational fisheries data collection in the Mediterranean and Black Sea” will also be taken into consideration.

Both data collection methods will be implemented following guidelines for good practices documented by experts groups (WGRFS, Eurostat).

The final results of the pilot study will be presented in a scientific report, with a complete description of methodologies applied and in a set of tables with complete estimates according to the main objectives of the pilot study. Final estimates will be accompanied by quality indicators related to bias and precision, according to the Quality Assessment Tool (QAT) developed by the WGRFS.

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(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 results obtained during the second phase has permitted to compensate the lacks of the Ministerial Register of Fishermen and estimate a reference universe of anglers. Once acquired this estimated universe, the second survey will estimate quantities and articulation of the catches

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

The pilot study was originally scheduled for two years, 2017 and 2018. Due to some administrative delays and to the late availability of the ministerial database, the pilot study was implemented in 2018 and it has been finalized in June 2019.

As a result of the first phase, it emerged that it was not advisable to consider the national Register as the universe of recreational fishermen but to carry out an ad hoc survey through a second phase of the pilot study.. Therefore, a national telephone survey was carried out in 2020 by a specialized company. The study allowed to estimate with reasonable statistical reliability the number and distribution of fishermen and the intensity of their activity. The results are also compared with those resulting from other surveys conducted during the same periods.

The same type of survey carried out in 2019 will be conducted in 2021 in order to refine and consolidate the results

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

The results of the second phase of the study, once carried out the second step (field survey) will allow to structure a regular sampling program for data collection

(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 Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 of the Implementing Decision (EU) 2016/1701 on the format of the WP.

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

1. Method selected for collecting data.

In Italy, 9 EMUs have been identified according to Eel Regulation (EC 1100/2007).

The monitoring and management of these EMUs are decentralized, as, according to national law, administrative regions are in charge for monitoring and management of internal waters. Access to freshwater areas/rivers would need to engage in discussions with regional administrations that should provide data.

This module for the monitoring of anadromous and catadromous species in Italy, and specifically eel, for the period 2017-2019, is planned as a pilot study, and the definitive monitoring scheme will be put in place only at the end of the period. In the first year, 2017, two EMUs will be involved, as a first hypothesis EMU_LAZ and EMU-PUG because representative the first of the Tyrrhenian side and the second of the Adriatic side, for both environmental features and organization of the eel EMUs. For each, the most representative habitat typology will be chosen according to the setting up of the Italian Eel Management Plan, as a first hypothesis an estuary/low river system in the EMU_LAZ and a coastal lagoon in the EMU_PUG. Details will be defined in the course of the first year. The methodology for the monitoring, and the protocol will be put in place and tested, also on the basis of previous experiences of monitoring carried out in the past for the necessities of the assessment for art.9 of EC Regulation 1100/2007. In the following years, the methodology will be tested and extended progressively to other EMUs, integrating and coordinating the various levels of intervention, both administrative and methodological.

(max 250 words per Area)

2. Were the planned number achieved? Yes/ No

Yes, according to the following considerations.

The objective of the fourth year of the pilot study (2020) was to test the monitoring protocols. Hence, the monitoring protocols have been extended to new EMUs: EMU-TOS (costal lagoon habitat) and I EMU-ER Emilia Romagna (riverine environment).

Recruitment monitoring – glass eel

EMU Toscana: Laguna di Orbetello (LGN): The monitoring site is the Fibbia channel. The monitoring was carried out with 2 glass eel fyke-nets, for 3 months, from October till December 2020.

EMU Emilia Romagna: Fiume Po (RIV): The monitoring was carried out in 3 sites on the Po River, and carried out with 2 glass eel fyke- nets in each site. Monitoring extended for 3 month, from October till December 2020.

Monitoring of yellow eel

EMU Toscana: Laguna di Orbetello (LGN): The monitoring was carried out installing a square net enclosure (100 m each side, h. 1.8 m, 12 mm mesh), thus enclosing a lagoon area of about 1.0 ha. Within the enclosure 16 fyke-nets were installed. Monitoring was carried out in May 2020.

EMU Emilia Romagna: Fiume Po (RIV): The monitoring was carried out in 3 different sites on the Po River, by fyke-nets, installed along the bank in 3 parallel rows of 10 fyke-nets, for a total of 30 fyke-nets, in each site. Monitoring was carried out in May 2020.

Monitoring of silver eel

EMU Toscana: Laguna di Orbetello (LGN): The monitoring site is the Fibbia channel. The monitoring was carried

out by 2 fyke-nets. Monitoring extended for 3 months, from October till December 2020.

EMU Emilia Romagna: Fiume Po (RIV): The monitoring was carried out in 3 sites on the Po River, by fykenets, installed along the banks in 3 parallel rows of 10 fyke-nets, for a total of 30 fyke-nets, in each site. Monitoring extended for 3 months, from October till December 2020.

Results.

The first three years of the pilot study allowed to test the monitoring scheme from the point of view of the sampling techniques on the field in the different habitat typologies, riverine and lagoon respectively, in different sites located in different EMUs. The methodology has been tested for the monitoring of each eel stage (glass eel/yellow eel/silver eel), using fyke-nets and enclosures, depending on the habitat typology. Monitoring frequency, one week per month, has been concentrated in the most suitable season for each stage (winter for glass eel recruitment and for silver eel escapement, spring-summer for yellow eel standing stock).

The monitoring carried out in 2020 allowed to test and consolidate such monitoring techniques, and to test statistical procedures for calculation of recruitment, standing stock and escapement at the EMU level. The statistical approach used in the pilot study will be strengthened by another year of fieldwork. Therefore, the Italian WP 2020-2021 foresees the continuation of the study until the end of 2021, in order to arrange a routine and systematic data collection. This will allow the incorporation of results from the pilot study into regular sampling by the Member State in all EMUs.

(max 500 words per Area)

Monitoring of silver eel

EMU Toscana: Laguna di Orbetello (LGN): The monitoring site is the Fibbia channel. The monitoring was carried out by 2 fyke-nets. Monitoring extended for 3 months, from October till December 2020.

EMU Emilia Romagna: Fiume Po (RIV): The monitoring was carried out in 3 sites on the Po River, by fyke-nets, installed along the banks in 3 parallel rows of 10 fyke-nets, for a total of 30 fyke-nets, in each site. Monitoring extended for 3 months, from October till December 2020.

3. Results.

The first three years of the pilot study allowed to test the monitoring scheme from the point of view of the sampling techniques on the field in the different habitat typologies, riverine and lagoon respectively, in different sites located in different EMUs. The monitoring carried out in 2020 allowed to test and consolidate the monitoring techniques, and to test statistical procedures for calculation of recruitment, standing stock and escapement at the EMU level.

The statistical approach used in the pilot study will be strengthened by another year of fieldwork. Therefore, the Italian WP 2020-2021 foresees the continuation of the study until the end of 2021, in order to arrange a routine and systematic data collection. This will allow the incorporation of results from the pilot study into regular sampling by the Member State in all EMUs.

(max 500 words per Area)

SECTION 1: BIOLOGICAL DATA

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

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

1. Results

Table 1F provides information on activities performed in 2020.

Incidental catches of vulnerable species according to the DCRF GFCM were monitored (observations reported in Table 1F, Incidental by catch) during normal biological sampling operations, recording, when observed, the occurrence of protected elasmobranchs.

Furthermore, given that the Regulation 812/2004 was repealed and replaced in June 2019 by the Technical Conservation Measures Regulation (Regulation (EU) 2019/1241) and PETS bycatch monitoring was further implemented through the EU-MAP (Regulation (EU) 2017/1004), a number of incidental catches have been recorded in GSA 16 and GSA 17 during ad hoc monitoring programme carried out on board of PTM_SPF_>=20_0_0.

Due to the COVID-19 and the pandemic situation, as well as administrative delays, the monitoring activity of accidental catches in the pelagic trawl took place between May and December 2020. The following incidental catches of elasmobranchs, sea turtles, and dolphins were caught in GSA 16 and 17: 10 *Caretta caretta*, 1 *Tursiops truncatus*, 9 *Squalus acanthias*, 8 *Myliobatis aquila*, 6 *Mustelus spp.*, 2 *Prionace glauca*, 11 *Pteroplatytrygon violacea* and 1 *Raja spp.*

2. Deviations from Work Plan

No vessel boarding could be conducted throughout 2020. Therefore, data collection was conducted through telephone and dockside interviews (where possible). In GSA 16, interviews were only conducted from May through June 2020; no data were collected from July through December 2020. While in GSA 17 incidental catch data were collected via interviews from May to December 2020

3. Data quality

- Does the onboard observer protocol contain a check for rare specimens in the catch at opening of the codend? No it doesn't.

- 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"? Not applicable.

- Does the onboard observer protocol instruct to report on the use of mitigation (i.e. Escape Devices or Acoustic Deterrent Devices)? Yes it does, within the protocol there is a specific spreadsheet to report the use of pingers or excluder 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.

The methodology used for the monitoring of the incidental by catch of PET species is the one proposed by the EU Project "Strengthening regional cooperation in the area of fisheries data collection in the Mediterranean and Black Sea" (MARE/2014/19 - SI2.705484). The incidental by catch of PET species was recorded using standardized forms and logbooks prepared following the recommendation and formats proposed by the EU Project MARE/2014/19 Med&BS (Guijarro, 2016; Ligas, 2016). For the pelagic trawlers in GSA 16 and 17, the

sampling design is following the recommendations provided by the ICES WGBYC and the Italian obligations under the Council Regulation (EC) 812/2004 which states that ‘Member States shall design and implement monitoring schemes for incidental catches of cetaceans using observers on board with an overall length of 15 m or over’ for selected fisheries listed in its Annex III

- Are data quality issues taken into account?

Once per month, data are quality checked by a trained technician. Specifically, both hardcopy and digital information are carefully screened and potential omissions are promptly communicated to the observer.

- How are data (and samples) stored

As far as the monitoring of bycatch according to EC Reg. 812/2004, all data collected by the observers are included in a protocol previously standardized during the editions of the BYCATCH project. Subsequently the data was sent, checked and archived in an historical database of the CNR-IRBIM. An archive was also provided for the photographic material of all the incidental catches, the sightings of dolphins and birds recorded during fishing operations and navigation on board fishing vessels.

(max 900 words)

SECTION 1: BIOLOGICAL DATA

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

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

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

Activities under EUMAP 3 b): Data to assist in the assessment of the impact of fisheries in Union waters and outside Union waters on marine habitats

Ecosystems are spatially heterogeneous and spatial patterns and processes are important to ecosystem structure and function, whereas the distribution of fishing activities depends on the distribution of the targeted resource. Mediterranean regulations very often have a spatial component explicitly through time and area closures. Spatial management tools are used to protect spawning aggregations, to reduce bycatch, or to meet other single-species objectives. Therefore, it is essential to provide ecosystem indicators for spatial effort to define and to evaluate management measures.

Within the Italian WP, the following ecosystem indicators for spatial effort will be estimated:

- “Distribution of fishing activities”. It will be based on the total area of grids (3 km x 3 km) within which VMS records were obtained, each month. This indicator will apply MCDA (Multi-Criteria Decision Analysis) to estimate the contribution of the small-scale fisheries, attempting to provide an overall representation of fishing effort.
- “Swept area of fishing activities”. It will be based on assessment of fishing effort by the total monthly swept area with respect to the 3 km x 3 km grid, for the portion of the fleet equipped by VMS and/or AIS.
- “Aggregation of fishing activities”. It will be based on the total area of grids (3 km x 3 km) within which 90% of VMS records were obtained, each month.
- “Gini’s Index of the fishing pattern”. It will be represented by the value of the Gini’s index computed, at a monthly scale, on the fishing effort pattern (hours of fishing per cell) returned within the computation of the indicators 5.
- “Areas not impacted by mobile bottom gears”. Indicator of the area of seabed that has not been impacted by mobile bottom fishing gears in the last year. It will be computed also at a monthly scale.

- “Substrates not impacted by mobile bottom gears”. Indicator of the area of seabed that has not been impacted by mobile bottom fishing gears in the last year with respect to the type of sea bottom substrates (fishing effort will be mapped on substrates distributions) and or bathymetric stratum (0– 20m, 20–50m, 50–80m, 80–130m, 130–200 m, 200–500 m, 500–800 m, 800–1000 m, > 1000m). It will be computed at both annual and monthly scale.

Methodological details are available on: <http://dcf-italia.cnr.it/main/docs/14>

Activities under EUMAP 3 c): Data for estimating the level of fishing and the impact of fishing activities on marine biological resources and on marine ecosystems

1. Aim of pilot study

Chapter III.3.C the new EU Dec. 1251/2016 specified that “Data for estimating the level of fishing and the impact of fishing activities on marine biological resources and on marine ecosystems, such as 16 effects on non-commercial species, predator-prey relationships and natural mortality of fish species in each marine region”, should be collected. Following this issue, the main objective of Pilot Study 2 is to increase the understandings on the diet and the preys sustaining the life cycle of the European hake, *M. merluccius*. The outcomes will provide useful elements to evaluate some parameters of population dynamics of the species

2. Duration of pilot study

The Pilot Study started in 2018, with the standardization of the protocols of data collection and analysis. The sampling of stomach contents, started in the second semester of 2018, continued in 2019 (all year) and 2020 (second semester). All the Italian GSAs are involved in this Study.

The Pilot Study was carried out in the years 2018-2019, involved all the Italian GSAs, and investigated the diet of *M. merluccius* by means of stomach content analysis. In the first months of 2018 the activities performed were mainly aimed at standardizing the working protocols, validating the procedures of identification of preys and the analysis of data., while in the second semester a first sampling phase and stomach content analysis was carried out. The results of 2018 were useful to finalise the sampling scheme; in the year 2019 the collection and analysis of the stomach contents of hake was carried out all the year.

3. Methodology and expected outcomes of pilot study

The methodology follows the indications of the EU Project MARE/2014/19 -SI2.705484. Sampling was stratified according to five size classes of hake: < 10.5 cm; 10.5 – 15 cm; 15.5 – 20 cm; 20.5 – 32.5 cm; > 32.5 cm. In all the Italian GSAs, in the second semester of 2020, 12974 specimens of *M. merluccius* were analysed for the evaluation of the stomach repletion and a total of 852 stomachs were analysed for the identification of their content. Samples came from both the MEDITS trawl survey and the biological sampling. The stomach repletion was macroscopically estimated (1: empty; 2: full < 50%; 3: full >50%; 4: bursting; 5: evaginated). The stomach contents were identified to the lowest taxonomic level possible. The following dietary indices were computed for each prey: Frequency of occurrence (%F); Percentage in weight (%P); Percentage in number (%N); Index of Relative Importance, $IRI = \%F(\%N + \%P)$.

In spite of the operational difficulties, both related to the field and laboratory activities, due to the Covid_19 pandemic situation, it was possible to achieve the planned sampling plan.

(max 900 words)

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

Overall, the 23.8% of the specimens analysed had the stomach with prey remains, while the empty stomachs were the 28.6% and the evaginated stomachs the 47.6%.

The diet of the European hake in the Italian GSAs is mostly composed by Bony Fish (about 78 IRI%), followed by Mysids (8%), Crustacean Decapods (7%) and Euphausiids (6%); the other taxa (Cephalopods, Isopods, Amphipods, Copepods, Bivalves, Gastropods) played a minor role in the diet. This pattern (clear predominance of Bony Fish) is similar at GSA level, with the exception of a greater importance of Mysids in the GSA 16 and Euphausiids in the GSA 17 (Pomo Pit area).

The diet is characterized by evident ontogenetic changes. The specimens of the first size class (< 10.5 cm TL) mainly preyed small Crustaceans, like Euphausiids and Mysids; Bony Fishes were present in the stomachs of the hakes of all the size classes, but they dominated the diet of the specimens greater than 15 cm TL.

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

With reference to the Work Plan, all the planned activities have been implemented.

All the indicators listed in the Work Plan have been calculated and, for those consistent with the historical series starting in 2006, the trend was analyzed.

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

The continuation of this Pilot study allowed increasing the overall knowledge on the trophic ecology of the European hake in the Italian Seas. Taxa identified as a prey moved from 100 in 2018, 192 in 2019, 205 in 2020; the diet remained stable at level of major Taxa, but changes in the species composition have been observed within each Taxa year by year. The presence of cannibalism was noticed in 5 out of the 7 GSAs investigated.

It is suggested to continue in monitoring of the diet of *M. merluccius* and the pool of trophic resources. It would be of interest also the study the diet of the main predators, a source of natural mortality. On this aspect, the outcomes of the EU Projects STREAM and STREAMLINE could provide useful indications for the methodology to be applied.

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(max 900 words)

SECTION 1: BIOLOGICAL DATA

Text Box 1G: List of research surveys at sea

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

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

MEDITS SURVEY (mandatory survey)

1. Objectives of the survey

The MEDITS programme aims to conduct coordinated bottom-trawl surveys Mediterranean. This bottom trawl survey derives from an EU project started in 1994 at European Mediterranean level (Bertrand et al., 2002), in which all the participants use the same gear, the same sampling protocol and the same methodology. The challenge of MEDITS survey is to provide data useful for describing and quantifying changes in the fish populations, through indices of demography, mortality, spatial occupation, biological traits, thus contributing to the routine stock assessments and the development of management advice tools. One survey should be carried out every year, during spring and beginning of summer.

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

Overall, MEDITS data shall be processed and analysed in line with the data collected according to the common protocol (MEDITS-Handbook. Version n. 9, 2017), to produce information (i.e. population distribution, abundance, size composition etc.), on benthic and demersal species found in an area with a depth ranging from 0 to 800 m within the seas adjacent to Italy (in Figure a) the 7 GSA are reported). The working zone (on the continental shelves and along the upper slopes) has been adopted to cover at best the distribution areas of the main exploited or potentially exploitable species, considering the administrative and technical constraints of the project. The stations will be distributed in each of the 7 GSA applying a random stratified sampling scheme using as strata the geographical combination of zones and depth. About 670 hauls should be carried out during each annual survey. In order to improve the quality of the MEDITS data and the consistency of the information collected a routine (RoME, Bitetto et al., 2017) has been developed for common use, which rationale has been incorporated in the checks made at JRC level during the data upload and the assessment working groups (STECF-EWG). Regarding the data storage, the FishTrawl webapp (a software system for data input, analysis, import/export, storage, checks), designed for scientific trawl survey data as MEDITS was completed, tested and it is available for common use.

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

Since 2001, the European countries bordering the Mediterranean and Black Sea are obliged to carry out Medits survey yearly in the framework of the EU data collection regulation. Up to now 8 Mediterranean EU countries (Italy, France, Spain, Croatia, Greece, Malta, Slovenia, and Cyprus) and 2 Black Sea EU countries (Romania and Bulgaria) collaborated in the project and permanent links are maintained with relevant bodies (i.e. RCGMed&BS and GFCM).

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

Targets number of hauls, by area and participating countries, are reported in the Annex III of the Medits Handbook (Version n. 9, 2017, MEDITS Working Group: 177 pp.).

5. Explain where thresholds apply

No threshold.

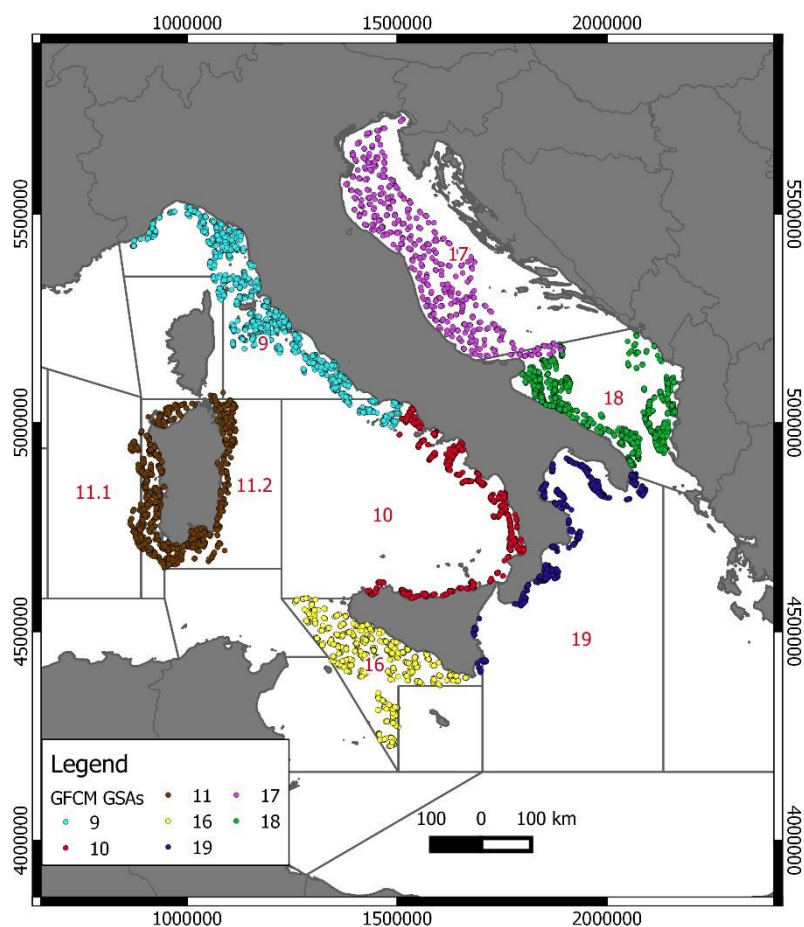


Figure a) MEDITS hauls foreseen in the 7 Italian GSA

MEDIAS SURVEY (mandatory survey)

1. Objectives of the survey

The Mediterranean International Acoustic Surveys (MEDIAS) have been carried out annually since 2009 in order to assess the abundance and spatial distribution of small pelagic species (anchovy - *Engraulis encrasicolus*, and sardine - *Sardina pilchardus*), in the Mediterranean Sea by means of acoustic methodology. The MEDIAS programme is internationally coordinated in the ambit of EU MEDIAS action. The aim is the evaluation of the state of small pelagics stocks in the main fisheries areas in Mediterranean.

The historical series obtained in terms of abundance by size and age class are used as tuning index in the stock assessment models of small pelagics in the Mediterranean. The main purpose of these models is to give advice on the state of resources, useful for defining any management measures in Europe.

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

This research is based on common protocol (MEDIAS-Handbook, 2019) and followed a multidisciplinary approach. MEDIAS surveys were conducted during summer (June-September). Acoustic data were systematically collected along transects (Fig. b) perpendicular to the coastline, on the continental shelf from a depth of 15-30 m to ~ 200 m, where small pelagic fish are mainly distributed. They were logged using a multi-frequency scientific echo sounder system properly calibrated each year, and processed with the resolution of one nautical mile, through the standard eco-integration method (Simmonds & McLennan, 2005). Biomass calculation was performed at 38 kHz, while other frequencies were used to discriminate fish echoes from noise and from non-target organisms. Analysis of acoustic data was conducted by means of dedicated software for echograms scrutinization. Synoptically with the acoustic data acquisition, net samplings on small pelagic fish were performed by means of a pelagic trawl. The aim is to determine species and size composition of the pelagic biomass (fish sampling is required to collect representative samples of the population from a qualitative point of view and not a quantitative point of view, as is the case of trawl surveys). Length frequency distribution

of all the caught fish species is recorded. Age samples of *E. encrasicolus* and *S. pilchardus* were collected and analyzed. Demographic structure and species composition of the pelagic populations has been derived also from pelagic trawls in order to evaluate the abundance and biomass per age, size and sex. Further, for an ecosystem based approach according to MEDIAS protocol environmental monitoring will be performed, thus CTD oceanographic data (temperature, salinity, fluorescence and dissolved oxygen) will be recorded (Tables 1.G, H).

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

The MEDIAS acoustic surveys should cover a series of areas in the Mediterranean EU MS (Spain, France, Croatia, Italy, Slovenia and Greece) with a standardised methodology. Italy covered (Fig. b): Adriatic Sea (GSAs 17 and 18; FAO Sub-Divisions 37.2.1 and 37.2.2), Tyrrhenian Sea (GSAs 9 and 10; Sub-Division 37.1.3) and Sicilian Channel (GSA 16; FAO Sub-Division 37.2.2). Concerning the MEDIAS database, in 2016 the Steering Committee has revised the format of existing databases related to acoustic surveys per study area and MEDIAS partners (AcousMed project, Contract MARE/2009/09 SI2). The aim is the proposal of a common database that will serve the needs of acoustic surveys in order to fulfil DCF requirements and standardize the output of surveys estimations. Concerning the availability of data, the reference period will be one year. For MEDIAS surveys, as agreed at regional level (RCMMed&BS Final Report, 2016), the results pertaining to the reference period (n) will be ready at the end of March of the year after (n+1).

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

The geographical areas that will be covered by the MEDIAS surveys and the respective days at sea per participating countries are reported in Table 1 of the MEDIAS manual (MEDIAS-Handbook, 2019).

5. Explain where thresholds apply

No threshold

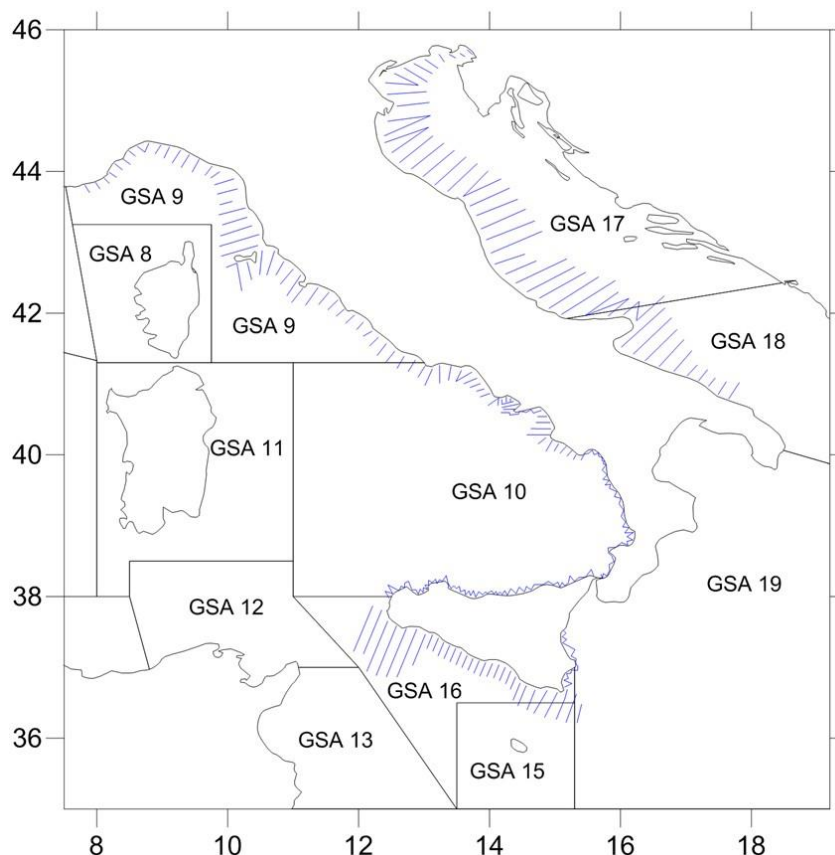


Figure b - MEDIAS acoustic surveys design in the 5 Italian GSAs

SoleMon survey (non mandatory survey)

1. Objectives of the survey.

Solea solea is an important resource in the GFCM area. About 25% of the GFCM landings of soles comes from the Adriatic Sea. In the GSA 17 soles are targeted by “rapido” trawl and set nets, that amount to around 500 boats, for a total of 1,600 fishermen and an annual value of landings of around 40 million Euros. The main survey objectives are: a) Assessing abundance and distribution in GSA17 of sole and other important demersal resources by surveys with “rapido” gears suitable to flatfish and other benthic animals. b) Pursuing the studies on the ecosystem impact of the “rapido” trawl fishery. c) Finally, since the new CFP is going to be more integrated in the EU maritime policy context [COM(2009)163 final], the data, will also contribute to the setting of the GES and targets for the Adriatic Sea in the framework of an ecosystem approach. Thus matching to the requirement of the implementation of the MFSD [DIRECTIVE 2008/56/EC].

2. Description of the methods used in the survey.

For mandatory surveys, link to the manuals. Include a graphical representation (map)

The survey should cover sole presence within the GSA 17 that, according to the genetic information pertains as a single stock (Figure 1). All this holds also for benthic fish and shellfish of commercial interest, including rays and other selachians, since EU greatly focuses on such vulnerable resources. Survey should be carried out based on the protocol used since 2005 (SoleMon Survey – Instruction Manual - Version 4, July, 2019; https://podaci.ribarstvo.hr/files/SOLEMON-Handbook_2019_Ver_4.pdf.) and utilizing the same gear. The gear is a modified beam trawl named as “rapido” trawl, and should be appositely planned to fish on different types of bottom. The research vessel should utilize two gears simultaneously in each haul.

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

As sole stock is shared among Italy, Slovenia and Croatia in GSA 17, we assume that the stock’s exploitation rate will increase in the next future, due to the foreseen development of the fishing sector in the States of Eastern Adriatic Sea, with a potential risk of overexploitation. Data will be shared in WGs, both at EU and GFCM level, and with all member States of AdriaMed through common database AtrIS and Trust.

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

Targets number of hauls, by area and participating countries, are reported in the Solemon Manual (SoleMon Survey – Instruction Manual - Version 4, July, 2019; https://podaci.ribarstvo.hr/files/SOLEMON-Handbook_2019_Ver_4.pdf).

5. Explain where thresholds apply

No threshold.

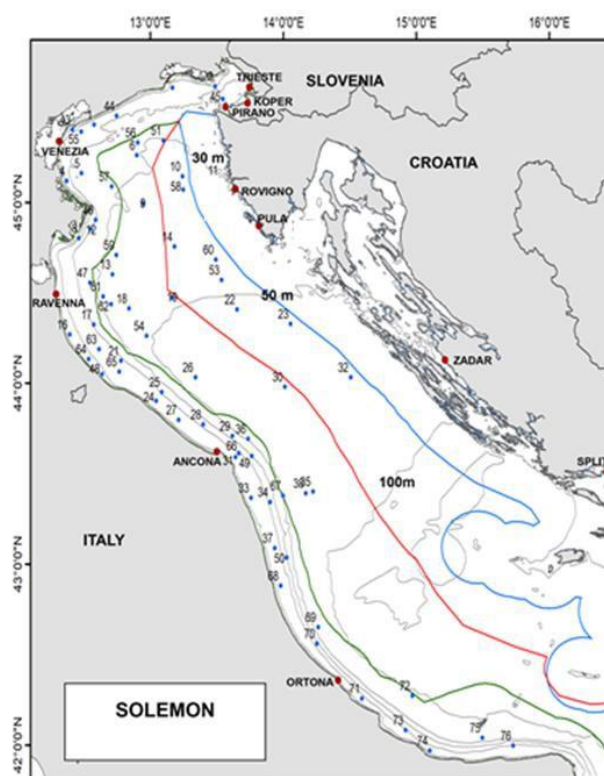


Figure 1 – Map of SoleMon stations.

DREDGERS_MOLLUSCS_SURVEY (DRES) (non-mandatory survey)

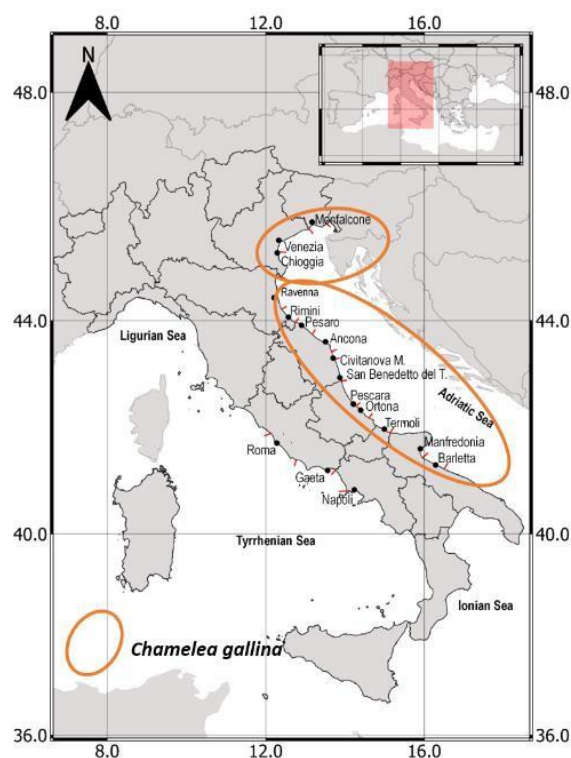
1. Objectives of the survey

Two management plans have been adopted in Italy through the Ministerial Decree of 24/07/2015 and the EC Regulation (EC) 2016/2376 (discard plan) for hydraulic dredges targeting the striped venus clam (*Chamelea gallina*). Both plans highlight the need to conduct a standardized annual survey (scientific survey), aimed at assessing the state of the resource and the effectiveness of the technical measures adopted. In the central Tyrrhenian Sea and, to a less extent, in the North Adriatic the hydraulic dredges also target the razor clam *Ensis minor*. This species is usually caught within 0.3 nm from the coast at a maximum depth of 4-6 m. Scientific surveys shall be conducted to assess the spatial distribution of the two species. Information from surveys combined with those from commercial data (landings) are necessary for stock assessment and to define the reference points for management. The main biometric measurements (length and weight) shall be recorded for the two species. Additionally, biological information (sex ratio, maturity, length-weight relationship etc.) have been previously collected in the 2019 for the striped venus, which has, in derogation, a minimum conservation reference size (22 mm).

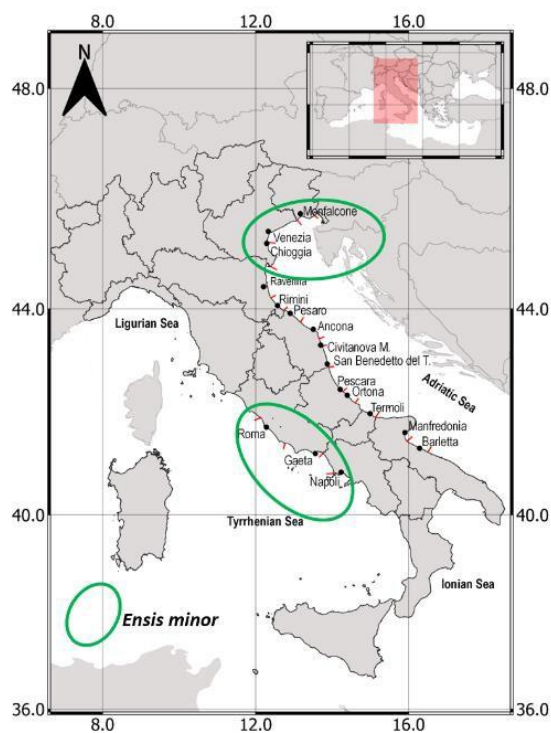
2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The recent surveys (2017 onwards) have been conducted following an operating standard protocol used on a national scale (DRES survey manual version 2.2, 2018). Commercial vessels are used to conduct the surveys. The commercial hydraulic dredge used to harvest *C. gallina* and *E. minor* are similar and comprise a rectangular cage 2.8-3 m wide, weighing around 600 kg, mounted upon two sledge runners. The cage is connected to a hose, which serves to eject water under pressure from the nozzles at the mouth of the dredge and inside the dredge cage. Surveys for *C. gallina* shall be carried out in the 13 marine compartments of the Adriatic Sea (GSA17 and GSA18, see Map 1), while surveys for *E. minor* were scheduled in 6 marine compartments (Roma, Gaeta, Napoli, Monfalcone, Venezia and Chioggia; GSA 17, GSA 9 and GSA 10, see Map 2). Each compartment shall be surveyed taking equidistant samples (0.25 nautical miles for *C. gallina*; every 2 m of depth for *E. minor*) until the resource is present, along transects perpendicular to the coast (separated by 2 nautical miles from each other.) At each sampling station, an area of around 300 m² is surveyed (width of cage 3 m x 100 m of tow). At the end of the tow, the cage is hauled, and its content dropped into a collecting box. The catch of the striped clam is conveyed to a mechanical vibrating sieve, composed of a sieving plane (19 mm holes diameter), while the razor clams are sorted by hand. All striped venus clams retained by the sieve are

weighed. For each sample, length frequency distribution of clams are studied. To study the fraction of juvenile clams, a net bag sampler with a small mesh is mounted inside the dredge. Size frequency distribution of this sample is also recorded.



Map 1 showing the marine districts foresaw by the National Plan for *C. gallina* in 2020.



Map 2 showing the marine districts foresaw by the National Plan for *E. minor* in 2020.

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

Not relevant

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

Not relevant

5. Explain where thresholds apply

No threshold.

(max. 450 words per survey)

MEDITS SURVEY (mandatory survey)

6. Graphical representation (map) showing the positions (locations) of the realized samples.

The map presenting the spatial distribution of the fishing hauls realised in 2020 for the 7 Italian GSA is reported in the Figure b) below.

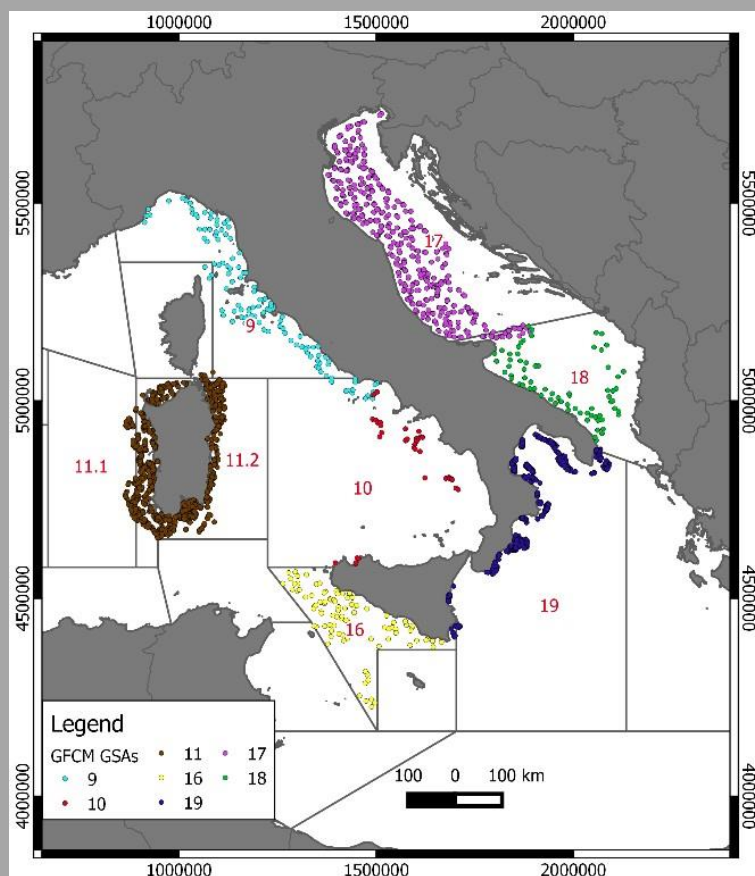


Figure b) MEDITS surveys: position of the hauls in the different Italian Geographical Sub-Areas (GSA)

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

The MEDITS international coordination reports are available at the following link: (<https://www.sibm.it/MEDITS%202011/principalereports.htm>). The Medits Steering Committee 2020 was not

convened in 2020. Indeed, at the time during which the MEDITS coordination meeting took usually place (April) the uncertainty due to the COVID_19 pandemic was very high.

8. List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators). The MEDITS trawl survey is aimed at estimating the distribution and abundance of all the species caught and the size structure of 52 species of commercial interest and 32 species of elasmobranchs. The identification of all the organisms with a dimension greater than 1 cm allows to characterize the benthic communities. The methodologies adopted are such as to make the results comparable with the similar surveys carried out in the past years in the same area, as well as in the areas of other European countries of the Mediterranean. The results of the MEDITS surveys are used since several years for:

- the estimation of the biological parameters of the different species;
- the estimation of the spatial distribution of the different species;
- the location of essential fish habitats (nursery and spawning areas) and sensitive habitats useful for spatial management;
- the study of fish communities (e.g. structure, functional groups, diversity) useful for implementing the ecosystem approach;
- the application of stock assessment models and tuning indices to be used in more or less complex stock assessment models.
- the application of research projects funded by the European Union such as MED_UNITS, MINOUW and FAIRSEA project.

In particular, the abundance indices were used in models of stock assessment during the two STECF working groups (STECF EWG 20-09 and 20-15) and to the Working Group on Stock Assessment of Demersal species (WGSAD) of the GFCM on the stock assessment of demersal species in the Mediterranean held at the beginning of 2021.

The MEDITS campaign also contains information on the distribution and mass of the macro-litter on the seabed, useful for the objectives of the Marine Strategy (Directive 2008/56 / EC).

9. Extended comments (Tables 1G and 1H)

The MEDITS 2020 survey was carried out in Italian territorial waters and in the waters of the 7 GSAs, in accordance with the provisions of WP 2020-2021. However, due to the COVID_19 pandemic the survey was carried out in almost all the GSAs, but GSA17, out of the official time period, and generally between September-October, while in GSA10 until December 2020. In the GSA10 and GSA16 the number of hauls was reduced and it was respectively 37 (original number 70) and 94 (original number 120) of the planned numbers. In GSA10 and GSA16, owing to the COVID_19 restrictions the scientific personnel was not embarked onboard. However, the trawling operations were remotely followed using camera and the app HIK-CONNECT.

Following the research carried out in previous project (e.g. RECFISH) the efforts in data standardization continued especially in GSA17, GSA18 and GSA19, in the framework of the activities of the AdriaMed Working Groups for stock assessment and in the Interreg project FAIRSEA. Results based on Generalized Additive Models (GAMs) approach were presented to the WGSAD for the data preparation towards the assessment of *M. barbatus* in GSA17 and GSA18 and for publication of scientific papers.

In the GSA 11 environmental and technical parameters related to horizontal and vertical openings have been have been only partially estimated for technical reasons.

MEDIAS SURVEY (mandatory survey)

6. Graphical representation (map) showing the positions (locations) of the realized samples.

Maps presenting the spatial distribution of the activities carried out in 2020 during the MEDIAS surveys per different Italian GSA, are reported below.

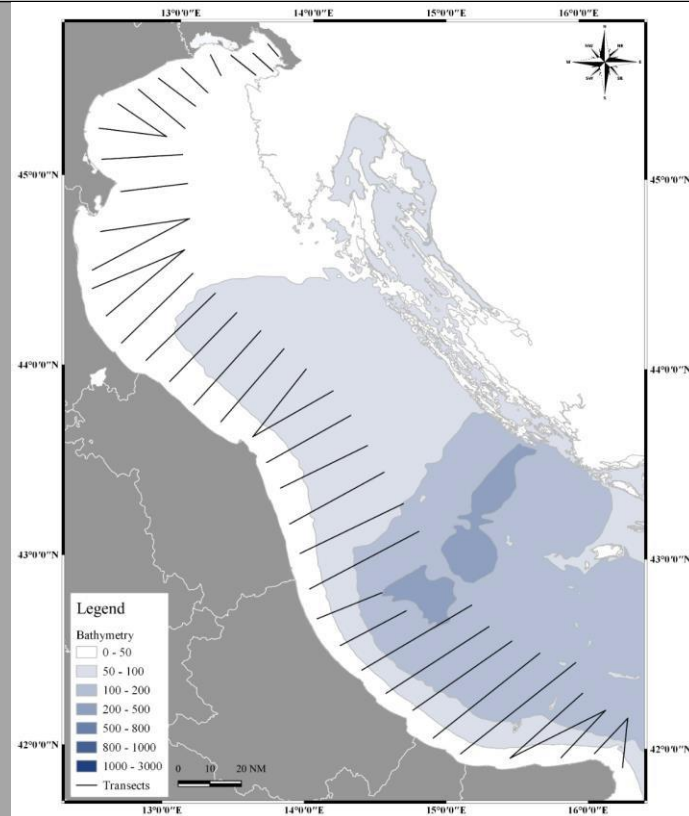


Figure c. Acoustic survey route plan in GSA 17 in 2020

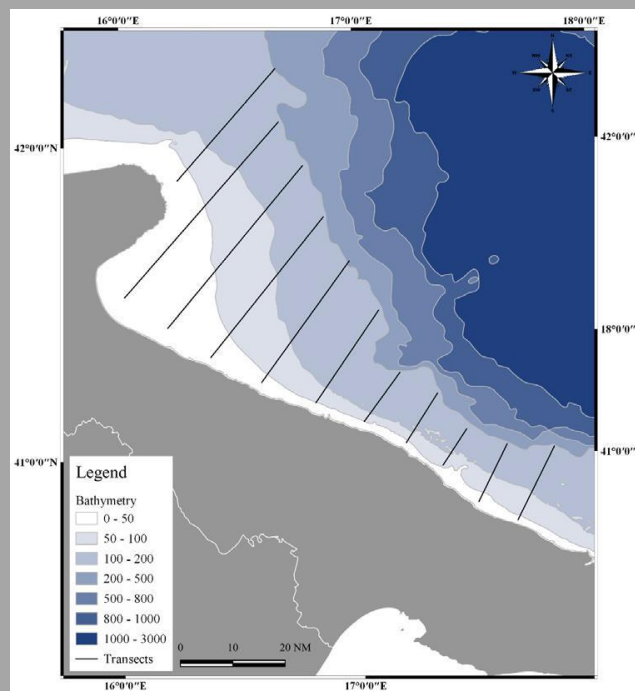


Figure d. Acoustic survey route plan in GSA 18 in 2020: due to COVID-19 pandemic restrictions only the first three transects were covered.

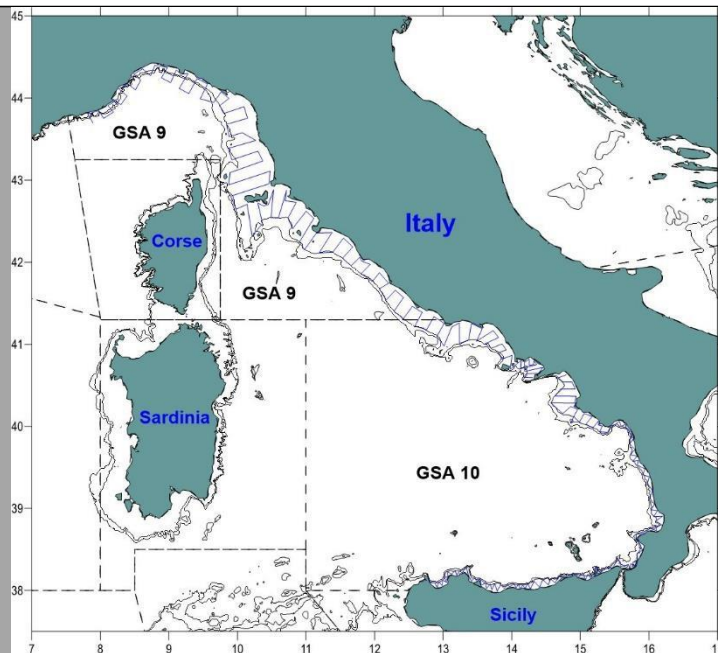


Figure e. Acoustic survey route plan in GSAs 9 and 10 in 2020

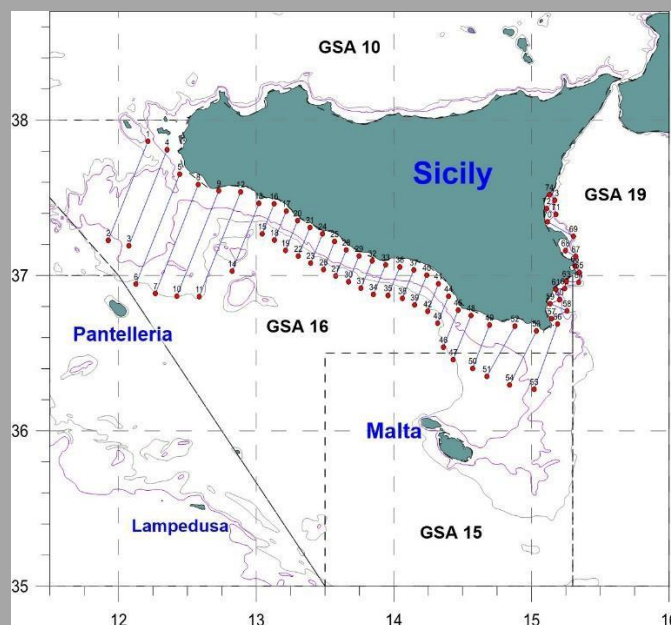


Figure f. Acoustic survey route plan in GSA 16 in 2020

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

The MEDIAS Steering Committee in 2019 has been in April. The report of MEDIAS 2019 is available at the following link: <http://www.medias-project.eu/medias/website/meetingrep/Meeting-reports/Report-of-the-12th-MEDIAS-Meeting---Athens/>.

In 2020, the meeting scheduled for April, in Ljubljana in Slovenia, was postponed due to the Covid-19 emergency.

8. List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators).

The results of the MEDIAS surveys have been sent to different WGs (e.g. GFCM stock assessment working groups) and data call (e.g. STECF-JRC) and have been used for the assessment of the abundance and spatial distribution of small pelagic species around the Italian seas. The results of the MEDIAS acoustic survey in

terms of biomass and abundance by age group were used as a tuning index during the WGSASP – Stock assessment of Small Pelagics. In particular, in 2020 the benchmark for small pelagics in the Adriatic was held: GFCM - Benchmark session for the assessment of sardine and anchovy in GSAs 17-18. June – December, 2020.

Annual results of the MEDIAS acoustic surveys: Abundance indices estimated (Total fish NASC for EDSU, Anchovy, Sardine NASC for EDSU, Anchovy, Sardine Biomass for EDSU, Anchovy, Sardine Numbers for EDSU, Anchovy, Sardine Number / age and per length class, Anchovy, Sardine Biomass / age and per length class) and Maps and charts (Point maps of total fish NASC, Point maps of target species in NASC / mile; biomass / mile, Catch compositions of the hauls, pie-charts indicating percentage by weight per species) are mainly used

- for the assessment of the state of target fish resources (anchovies and sardines), through the use of analytical stock assessment models, and

- for studies on the influence of environmental variables on the populations of small pelagics in the waters of the Mediterranean Sea.

9. Extended comments (Tables 1G and 1H).

Tables 1G and 1H have been compiled based on the MEDIAS protocol (MEDIAS Handbook, 2019). Tables 1C, 5A and 7A they have also been filled.

In 2020, the acoustic surveys were carried out in the period foreseen by the National Program Work Plan and according to the MEDIAS protocol.

The criticality in 2020 was caused by the COVID-19 pandemic which resulted in the significant reduction of ship days and also of the scientific personnel on board, preventing the completion of the acoustic survey activities in GSA 18 (only about 30%).

SOLEMON SURVEY (non mandatory survey)

6. Graphical representation (map) showing the positions (locations) of the realized samples.

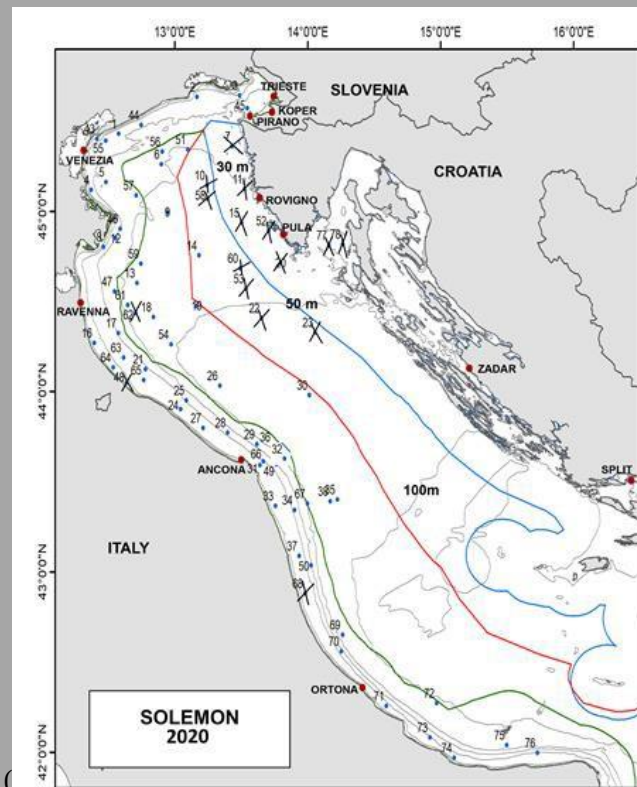


Figure 2 - Map of SoleMon stations in 2020. Crosses indicate the station not carried out.

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

The SoleMon campaign is internationally coordinated within the ICES Working Group on Beam Trawl Surveys (WGBEAM) since 2009. In 2020 the coordination meeting took place remotely. <https://www.ices.dk/sites/pub/Publication%20Reports/Forms/DispForm.aspx?ID=36681>).

8. List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators).

Table 1H details the data sampled during the SOLEMON survey. Table 5A shows the details regarding the quality assurance of the data sampled during the SOLEMON survey. Collected data on *S. solea*, *S. mantis* and *S. officinalis* have been sent to the stock assessment working groups both under GFCM SAC and STECF.

9. Extended comments (Tables 1G and 1H)

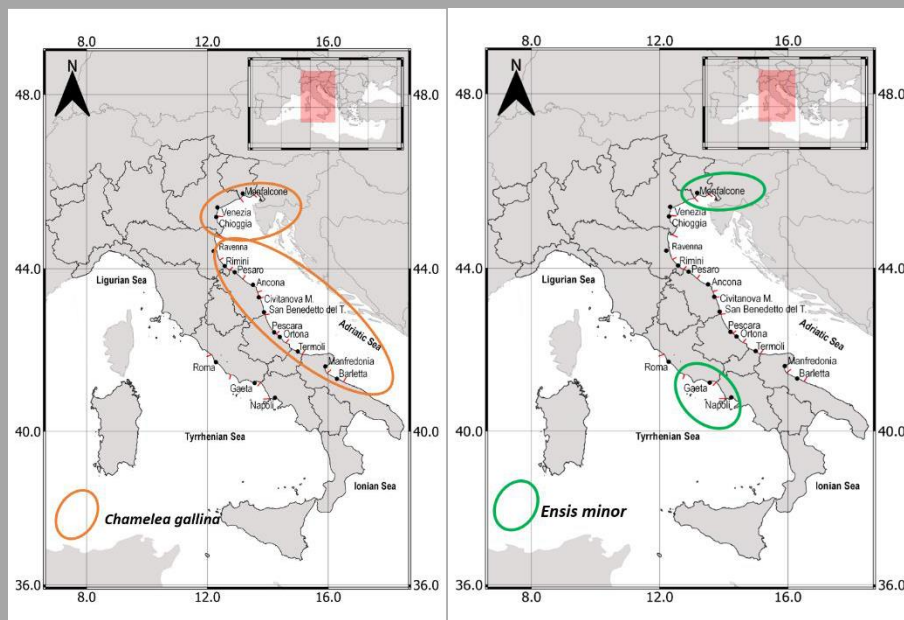
Survey data are now stored in a new database called TRUST:

(<http://www.kosmosambiente.it/scientifictrawlsurveys/>).

The 2021 SOLEMON campaign will start from November and December 2021.

DREDGERS_MOLLUSCS_SURVEY (DRES) (non-mandatory survey)

6. Graphical representation (map) showing the positions (locations) of the realized samples



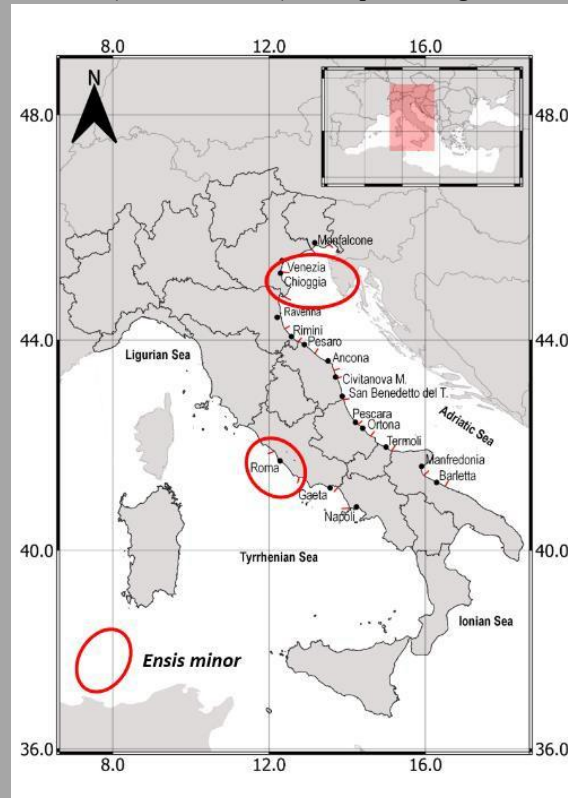
7. For internationally coordinated surveys, provide a link to the latest meeting report of the coordination group.
8. This is a national survey. A survey manual has been prepared and it is available in the Italian DCF web site (<http://dcf-italia.cnr.it>). List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators).

Concerning hydraulic dredges for striped venus clam (*Chamelea gallina*) three management plans have been adopted in Italy through the Ministerial Decree of 24/07/2015, the EC Regulation (EC) 2016/2376 (discard plan) and the Ministerial Decree of 17/06/2019. The surveys allowed to calculate key indicators (reference points, RPs) for the management of the resource. These RPs are listed in the “Piano di gestione nazionale per le attività di pesca con il sistema draghe idrauliche e rastrelli da natante” approved with Ministerial Decree of 17/06/2019. Important is the use by “Consorzi Gestione Molluschi” to define the daily fishing areas, the fishing quota, the closing periods and their duration.

9. Extended comments (Tables 1G and 1H)

In 2020, all DRES surveys to assess the stock of Venus clams have been performed. Some problems occurred instead for the monitoring of Razor clams. In particular, it was not feasible to conduct the surveys in the marine compartments of Roma (GSA 9), Chioggia and Venezia (GSA 18) for various reasons. The main problem was related to the difficulties in organizing the surveys due to the COVID pandemic, in addition to

the delay in receiving permits to operate with commercial vessels. It was therefore decided not to survey Chioggia and Venice, where the resource is known to be very scarce, and to postpone those surveys to the second half of 2021; a further problem was faced in the maritime compartment of Rome, where it was not possible to obtain the availability of commercial boats to carry out the survey. Considering the state of the razor clam resource in the north Adriatic, very scarce as detected by the sampling in recent years, it is considered necessary for the future to conduct only point-like surveys in this area, to evaluate a possible recovery of the resource. In addition, it is considered necessary to conduct in the future a first exploratory survey of the species smooth clam (*Callista chione*) to deep knowledge on the exploitation of this species.



Map showing the unsurveyed marine districts for *E. minor* in 2020.

(max 450 words per survey)

SECTION 2: FISHING ACTIVITY DATA

Text Box 2A: Fishing activity variables data collection strategy

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

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

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

The definition of all the fishing trips of the Italian fleet with their associated features is based on a cross-validation procedure of different sources of data. The procedure considers all available information at the most disaggregated level:

- ✓ Fishing fleet register. The fishing technique actually used by each vessel is checked on a quarterly basis. This activity includes: field surveys through the data collectors network used in sample surveys, cross-checking with the information reported in logbooks, VMS data, comparison with previous fleet structures.
- ✓ Logbooks and landing declarations. The Control Regulations data are consolidated monthly. Basic and regular checks are implemented on the gear used and on the species caught and landed. These declarative forms are the unique source of information for dredgers, tuna seiners and vessels operating outside the Mediterranean.
- ✓ Sales notes data. In addition to fundamental checks on the average price for the species at the highest level of geographical and technical detail, this source of information is also used to validate the data on the quantities landed by species.
- ✓ VMS data. The information on the geo localization of the fishing boat are a well established reality and their use covers 95% of the fleet => 15 meters (1600 boats). In addition to providing information about of the effort distribution, they are used as a control tool for the activity through crossing with the logbook declarations and the sample survey. They can also provide information on the gear used, therefore on the métier.
- ✓ Sample survey. It is the prevalent source of information for the fleet < 10 meters; sales notes data are also used to cross-checks sample data. The sample survey is also applied to the fleet > 10 m to integrate the information derived from the Control Regulation.
- ✓ Data from biological sampling and observing trips. The data derived from biological samples allow to estimate the discards of the main commercial species and estimate the frequency distributions of landing and discards. Furthermore, they provide productivity parameters such as the CPUE that can be used both as a check-control for the information coming from Regulation control and those derived from sampling survey.

Specific procedures are applied to verify the information obtained from the different sources, relating to a same variable (gears, days, catch and price for species), with the goal of identifying and validating the real figure and get an exhaustive picture of the fishery for scientific purposes.

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

The estimation of value of landings follows the same approach applied for the estimation of volume 37 of landings and of fishing effort. Methodologies are described under points 1 (Description of methodologies used to cross-validate the different sources of data) and point 4 (Description of methodologies used to plan collection of the complementary data).

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

For the units of the sampling survey, the price is derived from sales that can be done on different channels: the fish market (one or more), the wholesaler and the retailer. The latter case is common in units of artisanal

fisheries. Ultimately, a same species in a same trip can have multiple different prices. For the data obtained from the logbook, the prices are derived as the crosscheck of the survey data for the same stratum or the same area and from sales notes. Further use of the sales notes is to cross-check the price obtained from the survey.

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

The target population (universe) is made up of the set landings by the Italian fishing vessels. The sample set unit is the single vessel selected from the official list of the Vessel Register. The sampling is of a stratified nature in that the fishing vessels of the fleet are divided into homogenous groups based on suitable variables and independent samples are taken from each of these clusters. The optimum sample number per stratum is defined according to Bethel's procedure. This algorithm allows to obtain for each stratum, the optimal sample size, according to the predetermined error level. The error level has been raised to 7%, while in previous years was 4%. However, no loss of quality will result because the increase in the level of error will be compensated by the integration with the control regulation data. The vessels are selected using PPS methodology (Probability Proportional to Size) and, to be more exact, using the algorithm of Hanurav-Vijayan. Following the random extraction of vessels to be studied, the list is submitted to the network of data collectors that are selected professionals in the world of fishing and who have working relationships with the trade associations. They can easily get in touch with the owners of the ships and are usually present on landing. Primary data are collected and transmitted by means of specific software that works via the web. The Horvitz-Thomson estimator is used to obtain an estimate of totals per stratum, while the Sen-Yates-Grundy formula is used to estimate the relative sampling error. The estimate phase is preceded by a set of control and correction procedures of sample data to guarantee results with a determined level of quality.

(max 900 words per Region)

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

According with the provisions of the Work Plane, a sample survey has been the prevalent source of information for the fleet < 10 meters. The sample survey is also applied to the fleet > 10 m to integrate the information derived from the Control Regulation. The process is developed in several steps aimed at integrating the different types of information. In particular, in the first step, data of the various sources are treated separately ("vertical level"):

- ✓ logbook and landing declaration, LB;
- ✓ sample survey, IC;
- ✓ satellite control system, VMS.

The second step ("horizontal level") consists in the integration of the various sources. Synthetically, the phases can be summarized in the following steps:

- separate treatment of the various data sources of the control regulation - LB, VMS and of the sample survey;
- identification of 'missing data';
- estimation of the missing data with the help of the various sources.

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

No deviations..

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

The price, average by species was obtained from the sample survey, after verification with the historical series, carried out in the vertical phase of the work.

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

There are slight changes in the 2020 sample coverage from what was provided in Table 2A of the “Fishing activity variables data collection strategy” of the Work Plan. In general, as in previous years, the deviations are due to the need to expand the sample of smaller classes (<15 meters) that show a greater lack of information.

(max 900 words per Region)

SECTION 3: ECONOMIC AND SOCIAL DATA

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

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

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

Supra region: Mediterranean and Black Sea

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

Data sources will depend on the different types of data collection that will be used to collect the variables listed in table 5A of the EUMAP (see paragraph 2). In particular, data sources will be the followings:

- The Fleet Register will be used for the number of fishing enterprises and for variables related to the fleet (number of vessels, mean LOA of vessels, vessel's tonnage, etc.)
- Fleet register and ad hoc questionnaires will be used for estimating consumption of fixed capital and value of physical capital
- Accounts will be used for financial position
- Official administrative records will be used for reporting operating subsidies and subsidies on investments
- Ad hoc electronic questionnaires will be used to collect the rest of the variables listed in table 5A of EUMAP from the sample units of the survey described in paragraph 4.

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

Different methodologies and data sources will be used to collect the variables listed in Table 5A of the EUMAP, as reported below:

- ✓ A probability sample survey will be implemented to estimate the following variables:
 - Income (Income from leasing out quota, Other income)
 - Labour costs (Personnel costs, Value of unpaid labour)
 - Energy costs and energy consumption
 - Repair and maintenance costs
 - Other operating costs (Variable costs, Non variable costs, Lease/rental payments for quota or other fishing rights)
 - Investments in tangible assets, net
 - Employment (Engaged crew, Unpaid labour, Total hours per year)
- ✓ Gross value of landings and production value per species (Value of landings per species, Average price per species) and fleet variables will be collected as explained under text box 2A and table 2A.
- ✓ Subsidies and number of fishing enterprises will be collected through a census.
- ✓ Financial position will be estimated through a non-probability sample survey.

- ✓ Value of quota and other fishing rights will be derived from official declarations sent to the administration and interviews to fishermen to complete the information on actual price paid;
- ✓ Value of physical capital and consumption of fixed capital will be estimated through an indirect survey based on PIM (Perpetual Inventory Method).

○

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

The population will be all active and inactive vessels registered in the Union Fishing Fleet Register as defined in Commission Regulation (EC) No 26/2004 on 31 December of the reporting year and vessels that do not appear on the Register at that date but have fished at least one day during the reporting year.

The fleet will be segmented into homogeneous groups of vessels as defined by table 5B of EUMAP, according to the prevalent fishing technique. A further segmentation of the fleet based on a geographical criterion (combinations of administrative region and FAO geographical sub-areas (GSA)) will be used in the sampling design to improve the representativeness of the sample. This level of stratification may generate very small strata that have to be clustered to ensure statistical confidentiality and in order to design a statistically sound sampling plan. Such a clustering scheme will be consistent with previous years and will be maintained constant over time.

The sample size and its allocation among strata, as reported in table 3A has been carried out by using the software MAUSS-R, Multivariate Allocation of Units in Sampling Surveys, developed by ISTAT (Italian National Institute of Statistics). MAUSS allows to minimize the sample size according to maximum accepted sampling errors of target estimates for each stratum. The selected parameters for the estimation of the sample size and its allocation have been: labour costs and energy costs. See table 5B for further references.

4. Description of methodologies used for estimation procedures

Primary data referred to year n will be collected in the year $n+1$ through the sample survey and will be subjected to: a) a control process, b) correction of outliers and estimation of missing data, c) elaborations for the estimation of the final variables requested by table 5A of EUMAP.

The control process of primary data will consist of the following steps:

- identification of outliers on absolute values;
- identification of outliers on mean values;
- evaluation of the costs structure;
- comparison with benchmark data.

The final set of primary data resulting from corrections and imputation of non-response will be raised to the population. The raising factors will be calculated through calibration estimators (Deville and Särndal, 1992) which is the most efficient approach to be used in case of multivariate auxiliary information in the sample estimate from finite population. The methodology is available on: <http://dcf-italia.cnr.it/main/docs/14>.

The value of capital and capital costs will be estimated according to the PIM, which is based on the specification of the composition of the active fleet by age and on the estimation of price per GT. The price per unit of capacity will be estimated having in mind the price for building new vessels (replacement values). PGECON recommendations on the use of PIM will be also followed.

The estimation of data on subsidies will be based on the official lists provided by national and regional administrations. These lists will be further processed to consider only payments that can be classified as operating subsidies and subsidies on investments. Each payment will be associated with one vessel. This link will allow to report subsidies in fleet segments.

The estimation of financial position will be based on accounts for vessels belonging to companies which are obliged to publish financial statements.

5. Description of methodologies used on data quality

Three main methodologies will be applied to get consistent results for socio-economic parameters:

- monitoring of data collectors through field visits: to train data collectors and to ascertain what kind of contacts data collectors has established with operators;
- statistical control: identification of the main anomalies, outliers and missing data and analysis of consistency over time and with regards to “benchmark” parameters;
- cross-checks with other data sources: activity data, VMS, balance sheet data

Finally, coefficient of variations (cv) will be calculated for the final estimates through statistical procedures.

Methodologies used for statistical control of primary data and for the estimation procedures are available on: <http://dcf-italia.cnr.it/main/docs/1>.

Other regions

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

The Italian Fleet Register includes 9 vessels with a license to operate outside the Mediterranean waters. The activity of these vessels depends on fisheries agreements in place and may vary every year.

The data source for the collection of the economic data will be the Economic&Loss Reports and the Balance Sheets.

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

Economic data for the fleet operating in “other regions” will be collected through a census..

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

The accounts and balance sheets of all the vessels that will result from official information that have fished outside the Mediterranean Sea will be collected and analysed.

For inactive vessels value of capital and consumption of fixed capital will be collected.

Economic data will be provided at the level of fleet segment. If the fleet segments will be composed by less than 2 vessels, economic data will be collected but not published for confidentiality reasons

4. Description of methodologies used for estimation procedures

The aim of the survey is to get exhaustive information for all vessels.

5. Description of methodologies used on data quality

The data source will be the Profit and Loss Accounts and Balance Sheets. However, operators will be also contacted to ensure a precise alignment between accounting data and variables listed in table 5A of the EUMAP.

Response rate will be provided for each variable of table 5B of EUMAP as an indicator to assess the quality of final estimates.

(max 900 words per Region)

Supra region: Mediterranean and Black Sea

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

No deviations

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

No deviations

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

The sample rates provided for in the Work Plan (Table 3A) were defined on the basis of the last fleet available at the date of preparation of the Plan. Even if the sample was defined trying to maintain the same sampling rates reported in the WP, the discrete nature of the phenomenon still produces small differences in percentage terms of sample coverage. More significant deviations may instead be due to structural changes in fishing activity, which in the reference year led to the inclusion in the sampling plan of the fleet segment PGP VL1824, a segment that was not included in the fleet used for the preparation of the Work Plan. The presence / absence of particular fleet segments depends on the activity carried out during the year. Since the fleet segment is defined on the basis of the prevailing gear (used for more than 50% of fishing days), vessels can be classified in different fleet segments from one year to another. As for the PGP VL1824, for which no sample rate was planned, a sample rate of 13% was estimated using the MAUSS-R software so to have coefficients of variation in line with the other fleet segments. This segment has been included in Table 3A.

9. Deviations from Work Plan methodology used for estimation procedures

Due to the COVID-19 emergency situation, the estimation procedures have been processed with some delays affecting the data collection and the relative control activities and the estimation of the final data. A first draft estimate was produced at the end of 2020 using only about half of the primary data collected; while the final estimate produced on the whole set of primary data was made in early 2021. Therefore, the economic estimates have been provided according to the deadline set in the WorkPlane

10. Quality assurance

10.1 Sound methodology

Data collection follows statistical methodologies, as indicated in table 5B. The sample methods are reported in the document available at the following web link: <https://dcf-italia.cnr.it/web/#/links/linee-guida>. PGECON recommendations, as well as methodologies and definition, as provided by the PGECON sub group on Statistical and Methodological Issues (SIM), have been also considered.

10.2. Accuracy and reliability

Response rates and achieved sample rates are provided in Table 3A.

Data were collected using a web based questionnaire developed to carry out the survey. The software is available on a web platform to facilitate the compilation of the survey by the data collectors (NICO). The quality control activity of the sample economic data consists of the following phases:

- ✓ Initial check for typing errors and outliers,
- ✓ statistical and consistency checks of the sample data,
- ✓ benchmark analysis,
- ✓ coherence analysis and filters on submitted data,
- ✓ reports sent to detectors with indication of anomalies and errors,
- ✓ checking the data entered using official data sources (deposited balance sheets, VMS and logbook data).

In addition, quality checks are, usually, carried out through interviews with sector operators, use of auxiliary information or subjective knowledge on the sector and statistical analysis of final estimates on the basis of the historical time series. The localization of outliers ("outliers") is based on the definition of acceptance intervals

outside of which a statistical unit is considered anomalous and then subjected to control and, eventually, to correction.

The quality indicators of the estimates relating to 2019 and classified by type of variable, supra-region, fishing technique and length class, are based on the calculation of three indicators: the achieved sampling rate, the percentage response rate and the coefficient of variation. All the quality indicators have been calculated within the database of aggregated data for each stratum of the fleet and for each variable being surveyed. The calculation of the coefficient of variation for the variables of the sample survey is based on the algorithm programmed in R environment, in which the CV is estimated on the basis of the weights and probability of inclusion of the first and second order.

Compared to previous years, it was not possible to carry out the usual field checks. The impossibility of travel imposed by the continuing health emergency situation led to the need to contact the surveyors by telephone or videoconference; these activities were carried out constantly both to monitor the economic and social situation of the sector during the lockdown period and, at a later stage, to continuously monitor the collection of sample data. In this way, the lack of field monitoring was compensated by frequent contact with remote detectors.

10.3. Accessibility and Clarity

Are methodological documents publicly available? Yes

Are data stored in databases? Yes

Where can methodological and other documentation be found? Methodological documents and protocols are available in the national web site for the Data Collection Framework,

Provide the web link, if documentation is publicly available

<https://dcf-italia.cnr.it/web/#/links/linee-guida>

OTHER REGIONS

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

No deviations.

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

No deviations.

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

No deviations

9. Deviations from Work Plan methodology used for estimation procedures

No deviations

10. Quality assurance

10.1 Sound methodology

Economic data on revenues and costs associated with fishing activities have been estimated through the analysis of the official financial statements of companies that carry out fishing activities outside the Mediterranean. The estimated data have been settled on the basis of the catches reported in the logbooks.

During 2019, 8 vessels were active, of which 7 were operating in the CEEAF area, using trawler nets and one purse seiner was active in the IOTC area. To estimate the economic data, the financial statements of all the active vessels were analyzed and reclassified on the basis of interviews with sector operators carried out in

previous years and which made it possible to link the balance sheet items with the economic variables requests by EUMAP. Data referring to the only purse seiner in IOTC were collected but for reasons of confidentiality were not transmitted.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3A. The estimates have been checked and validated through: consistency with the results of the economic performance of the vessels and the related company balance sheets, analysis of the average parameters by vessel and type of fishing activity, the comparison of the 2019 average parameters with 2017 and 2018.

10.3. Accessibility and Clarity

Indicate with Yes or No. Yes

Are methodological documents publicly available? Yes

Are data stored in databases? Yes

Where can methodological and other documentation be found? Methodological documents and protocols are available in the national web site for the Data Collection Framework,

Provide the web link, if documentation is publicly available

<https://dcf-italia.cnr.it/web/#/links/linee-guida>

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

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

1. Aim of pilot study

Social variables as indicated in Table 6 of EUMAP have been subject to pilot studies and 2017 and have been collected for the first time in 2018. According to the EUMAP, social data will be collected again in 2021 (every three years starting from 2018).

The collection of social data will cover: the fishing sector, marine and freshwater aquaculture and processing industry.

The methodology will be in line with the results of the pilot studies and will follow PGECON methodologies. The sampling plans for the social variables for the fleet sector is reported in table 3A and for the aquaculture sector in table 3B.

(max 900 words)

Pilot study for the fishery sector

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

No activity has been implemented in 2019 because according to EUMAP social data have to be collected every three years. Social data will be collected again in 2021 (every three years starting from 2018).

.

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

Social data will be collected in 2021 on the basis of the methodology tested in 2017 and applied in 2018.

Pilot study for the aquaculture sector

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

No activity has been implemented in 2019 because according to EUMAP social data have to be collected every three years. Social data will be collected again in 2021 (every three years starting from 2018).

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

Social data will be collected in 2021 on the basis of the methodology tested in 2017 and applied in 2018

Pilot study for the processing sector

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

No activity has been implemented in 2019 because according to EUMAP social data have to be collected every three years. Social data will be collected again in 2021 (every three years starting from 2018).

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

Social data will be collected in 2021 on the basis of the methodology tested in 2017 and applied in 2018.

(max 900 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

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

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

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

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

The main data sources will be the annual financial statements of companies in the aquaculture sector that will enable the collection of the variables requested by table 7 of EUMAP. Economic data will be collected from the analysis of accounts and financial statements, but also through direct contacts with businesses to ensure perfect alignment between the accounting data and variables required by table 7 of EUMAP.

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

All the economical parameters will be estimated through a “Probability Sample Survey” in which the sample will be randomly selected from the universe of aquaculture firms.

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

Economic data will be collected for the aquaculture sector as defined by EU Reg. 1380/13 and the population will be defined according to EUMAP (enterprises whose primary activity is defined according to the European classification of economic activities NACE (1) codes 03.21 and 03.22 and who operate for profit). The sample frame and the allocation scheme will be derived from the Eurostat survey implemented according to REG CE n. 762/2008. The optimum sample number per stratum is defined according to Bethel’s procedure, that is a mathematical algorithm to achieve the optimum sample allocation in a multivariate sample survey. Information will be collected through the choice of a representative sample per single productive segment, with a random selection. Once selected the firm sample per productive segment it will also be possible to substitute a single firm if necessary. No social and economic data on aquaculture will be collected for species accounting for less than 10 % of the Italian aquaculture production by volume and value.

4. Description of methodologies used for estimation procedures

To obtain the estimates of the totals per stratum, the Horvitz-Thompson formula will be used, derived for the particular case of the simple random sampling without replacement. According to this particular estimator, the variance and the CV will be calculated to evaluate the precision level. Additional information is available on: <http://dcf-italia.cnr.it/main/docs/14>.

5. Description of methodologies used on data quality

Accuracy indicators will be calculated to provide information on the quality of the collected data, for each variable. In particular, information on data quality will be given in terms of target precision levels and coverage rates. The estimation of the variance for the calculation of the CV will be also provided. The phase of controlling and correcting data consists in identifying and treating errors present in the primary data, in the aim of guaranteeing final results with specified levels of quality. Additional information is available on: <http://dcf-italia.cnr.it/main/docs/14>.

(max 1000 words)

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

No deviations

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

No deviations.

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

Following a check of the technical segmentation, it emerged that the few companies included in the "Ponds" technology for the trout sector are actually part of the segment "Tanks and raceway" and in that segment have been included. This adjustment has been also reported for the provision of data within Eurostat Reg.

9. Deviations from Work Plan methodology used for estimation procedures

No deviations

10. Quality assurance

10.1 Sound methodology

The applied methodology is compliant with the one reported in the Work Plan and available on the Italian DCF web site.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3B. The number of companies to be investigated was established by setting the admitted sample error limit or, equivalently, the coefficient of variation, in relation to the previous years. The greater the variability found and defined by the standard deviation, the greater the sample size necessary to obtain a predetermined level of variation. A first step of data control and correction consisted in identifying and treating errors in the primary data (data collection phase), with the aim of guaranteeing final results with specific levels of quality. With regard to the quality of the data, both the sampling error and the non-sampling error were checked. In view of this, the sample error can be reduced by defining a sample size that ensures the accuracy of the estimates. For this purpose, the sample size has been set by the Bethel criterion which is a generalization of the Neyman criterion in the presence of a stratified sample.

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? National Website for DCF

Provide the web link, if documentation is publicly available <http://dcf-italia.cnr.it>

(max 1000 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

Pilot Study 4: Environmental data on aquaculture

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

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

1. Aim of pilot study

The aim of study is to assess the feasibility to provide the environmental data on aquaculture as indicated in Table 8 of EUMAP to enable the assessment of aspects of its environmental performance. Environmental data may be collected on the basis of pilot studies and extrapolated to indicate totals relevant to the total volume of fish produced in the Member State.

2. Duration of pilot study

The pilot study was implemented in 2017. Environmental data will be collected every two years starting in 2018.

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3. Methodology and expected outcomes of pilot study

According to EUMAP, the variables to be collected are:

- medicines or treatments administered, by type, extrapolated from data recorded under Annex I, point 8(b), of Regulation (EC) No 852/2004 of the European Parliament and of the Council
- mortalities, extrapolated as a percentage of national production from data recorded under Council Directive 2006/88/EC, Article 8, Paragraph 1(b).

A sub sample of the one used to collect economic data for the aquaculture sector will be extracted.

This sub sample will be defined in a way which enable to cover all the segments reported in table 9 (Segmentation to be applied for the collection of aquaculture data) of EUMAP and for which the economic survey will be implemented. An additional questionnaire will be prepared and administered to the selected sampling units. The questionnaire will be divided into two sections:

- 1st section: qualitative information:
 - o procedures adopted by the enterprises to record the data requested by Regulation (EC) No 852/2004 and by Council Directive 2006/88/EC;
 - o who is responsible for the registration of these data o how these data are recorded (electronic files, paper registers, ecc.);
 - o the availability to provide this data for the purpose of the EUMAP;
- 2nd section: quantitative information:
 - o medicines or treatments administered, by type, in grams;
 - o mortalities, per cent

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(max 900 words)

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

Given the nature of a pilot study, this was articulated only on the productive technologies of marine fish, leaving out the sectors of shellfish farming and crustacean farming.

Environmental data were collected on a sub-sample to obtain indications of the variables, in relation to the total volume of national fish production.

The pilot study, which represents a novelty compared to previous years, was tested and implemented in 2017.

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

The case study on environmental aquaculture made it possible to verify the information collection procedures on healthcare at the production companies, and to develop a data collection form to be used for future surveys, highlighting some difficulties in collecting data that will necessarily have to be overcome in the future routine surveys, developing the following points:

- Need for a specific document by the client of the study explaining the purposes of the data collection and authorizing the territorial network to collect data.
- Direct relationship with the health manager of the company, often external to the company, for the timely collection of data.
- In-depth information on accessibility and procedures for accessing health data present at the BDN for aquaculture.

(max 900 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

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

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

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

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

In Italy, the fish processing sector is part of the industry, manufacturing sector with NACE code 10.20 (fish processing activity). Economic data for all enterprises will be collected through the implementation of a specific survey. The main data sources for income and costs variables will be enterprises' registers and the official balance sheets of these companies. Subsidies on investments will be collected by using the main administrative sources (e.g. funds allocated under EMFF).

In order to collect all the economic data on employment, enterprises' registers will be cross-checked with other national data sources (e.g. labour registers and statistics) for providing the main economic data on employment (including the social data and economic data on FTE and labour time).

As far as the social data related to employment, after the first data collection in 2018 (data referring to 2017) data will be collected for the whole sector every three years (next time in 2021), as endorsed by PGECON.

The main data sources (e.g. labour registers, ad hoc questionnaires and official data on labour forces) will be cross-checked and used for providing the variable listed under Table 10 of EUMAP.

The main economic variables (e.g. turnover and number of enterprise) will be collected also for enterprises exerting the fish processing activity as secondary activity. The main data sources will be enterprises' register for the number and balance sheets and interviews for turnover attributed to fish processing activity. Data will be provided by size classes ensuring, where emerging, confidentiality.

Collection of data on raw material in weight, by species and origin, for the whole sector were collected through a pilot study in 2018 and will be collected again in 2021 (every three years starting in 2018). Meetings with the industry representatives will help to select industries and collect data.

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

Economic data for the overall population, main and non-main, will be collected by mean of an ad-hoc survey, trying to ensure a coverage rate in line with previous years. The survey will be based on a non-probability sample (for both the main and non-main segments of the industry), using primary data (balance sheets) of enterprises for which they are publicly available (ensuring, as in the past, an average coverage rate of around 40% and more).

Social data will be produced by cross-checking data from a non-probability sample survey and official data on labour forces (i.e. Istat sources).

Data on raw material will be collected by mean of questionnaires and interviews submitted to selected industries (according to the representativeness) and in line with methodologies suggested by PGECON.

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

For the data collection conducted by mean of ad-hoc surveys the sampling frames will be defined according to the surveys already implemented under previous work plans.

4. Description of methodologies used for estimation procedures
In case of economic data gained through sample, standard statistic parameters will be applied to raise the values to the overall population.

5. Description of methodologies used on data quality

The quality of data collected by mean of ad-hoc survey will be ensured by applying sound statistical approaches and providing data on coverage rates and coefficient of variation.

Quality will be assessed by response rate and the sampling errors will be expressed by the main quality and accuracy indicators (e.g. standard error and/or coefficient of variation). (max 1000 words)

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

No deviations.

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

No deviations

The sampling methodology is based on a non-random sample, as the selection of the sample companies is based only on those publishing balance sheets (frame population), meaning that only joint stock companies, obliged to publish the financial statements, are eligible to be sampled. Primary data used in the sample survey for the estimation of economic of the fish processing industry are collected by consultation of financial statements. The production of final estimates is made through raising the primary data to the whole population applying statistical expansion factors. The methodology used to estimate the economic parameters is reported in the methodological report available at: <https://dcf-italia.cnr.it/web/#/links/linee-guida>

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

No deviations

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9. Deviations from Work Plan methodology used for estimation procedures

No deviations

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10. Quality assurance

10.1 Sound methodology

The sampling methodology is based on a non-random sample, as the selection of the sample companies is based only on those publishing balance sheets (frame population), meaning that only joint stock companies, obliged to publish the financial statements, are eligible to be sampled. Primary data used in the sample survey for the estimation of economic of the fish processing industry are collected by consultation of financial statements. The production of final estimates is made through raising the primary data to the whole population applying statistical expansion factors. The methodology used to estimate the economic parameters is reported in the methodological report available at: <https://dcf-italia.cnr.it/web/#/links/linee-guida>

10.2. Accuracy and reliability

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

In 2020, accuracy indicators for the 2018 annual data were calculated. For each variable and for the total population, the following accuracy indicators have been calculated: Achieved sample rate, Sampling strategy, Precision level. The calculation of these indicators followed the indications of the manual on the quality guidelines of the DFC (Moura, 2016) and the guidelines published on the Data collection website:

<https://datacollection.jrc.ec.europa.eu/wordef/accuracyindicators>

10.3. Accessibility and Clarity

Are methodological documents publicly available? Yes

Are data stored in databases? Yes

Where can methodological and other documentation be found? In the Italian DCF web site

Provide the web link, if documentation is publicly available. . <https://dcf-italia.cnr.it/web/#/links/linee-guida>

(max 1000 words)

Text Box 4A: Sampling plan description for biological data

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

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

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

REGION: Mediterranean Sea and Black Sea

In order to ensure congruency along the data series, Italy reported data by metiers as recommended by RCMed&BS-LP 2016, and as defined by EU Decision 1251/2016 under Chapter III (data requirements), paragraph 2(a) requesting catch data at the aggregation level 6 (corresponding to mesh size). The reference list of metiers is being reproduced in RCM MED&BS LP 2016 report for ease of reference. With the exception of the metier targeting large pelagic and eel, all the collection and analysis of data will be performed and reported at GSA level (<http://www.fao.org/gfcm/data/map-geographical-subareas/en/>). Sampling will be performed in order to evaluate the quarterly length distribution of species in the catches, and the quarterly volume of discards. Discards evaluation will be carried out only for the selected metier as agreed both during the RCMed&BS-LP 2016 (see Annex IX of the mentioned report), and during the RCGMed&BS, 2019..

Tables 1A, 1B and 1C

RCMed&BS-LP 2016 agreed that stratification of stocks for data collection should follow the structure followed in the previous years (Group 1, 2 and 3 species, EU Decision 93/2010), which is also in line with the approach, and the spatial stratification, as identified in the adopted GFCM Data Collection Reference Framework (DCRF manual v. 19.1 - GFCM, 2018).

Table 1A - In the current column namely 'Area/Stock' it is present the FAO division as in the Table 1A of the COM Delegated Decision, 2019/910. However in the Med&BS, stock assessment and fisheries management are carried out based on GFCM Geographical Sub-Areas (GSA) and not at FAO division level. So, as agreed at Regional level (see RCMed&BS-LP, 2016 Annex X), all the Med&BS countries in the 'Comments' column should report the relevant GSA/s in which the stock/species really occurred and for which biological sampling will be carried out. The identified GSA/s where the biological sampling will be carried out it has been correctly reported in Table 1B and 1C. Average landing data and share in EU landing have been obtained from the data sharing during the RCGMed&BS, 2019 meeting (Malta, September 2019).

Table 1B - Length data should be collected and reported yearly for all the three identified group of species. Other biological parameters (i.e. sex, age, maturity, weight) shall be collected and reported yearly for Group 1 species (GFCM-DCRF Appendix A.1), whereas, for all Group 2 species, sex, age, maturity and weight, should be reported every three years (as requested by GFCM-DCRF Appendix A.2).

Furthermore, as agreed during RCGMed&BS, if a species it is presents in Groups 1, 2 and 3 of the GFCM-DCRF (GFCM, 2018) and it is absent from the tables of the EUMAP this species has been included in the sampling plan.

Table 1C – RCM Med&BS-LP 2016 agreed that the number of demersal and small pelagic individuals to be sampled should be decided by the MS based on previous sampling knowledge. Starting from 2021, the optimum number of individuals required for biological data sampling will be revised and calculated using the

tool devised by the project STREAM and presented during the last Regional Coordination Group (RCGMed&BS, 2019).

Concerning large pelagic species, length data should be reported yearly. Sex, age, maturity and weight should be reported in accordance with the end-user needs and coordinated at regional level (Table 1B). With regard to the number of individuals to be sampled for large pelagic (Table 1C), the RCG-LP is currently working on devising an appropriate tool to calculate the optimum number of individuals to be sampled. As this tool is not available yet, the same number of individuals, as regionally agreed by each country for the previous triennial period, is to be retained (see updated table in the RCM MED&BS-LP 2016 report).

Regarding sharks, it should be underlined that most of the proposed species reported both in Tables 1C and 1D of the EUMAP (COM Delegated Decision, 2019/910), and in the Appendix A.3 of the GFCM-DCRF (GFCM, 2018), are rare and with a sporadic and not confirmed presence in the Mediterranean area. For this reason, during the RCMMed&BS, it has been decided that no planned minimum number and sampling strategy should be associated to the collection of “sharks” species. Following the above mentioned issues all the elasmobranch species (with the exceptions of the 4 species reported further down) have not been listed in the tables 1B and 1C of the working plan, because for those species it will not be possible to draw a sampling plan. However, all elasmobranchs species, whenever they occur during the biological sampling, will be sampled concurrently for length and then reported in the Annual Report. Biological information, such as sex, age, weight and maturity, will be also collected and reported when available, through the research surveys at sea.

As mentioned before, in the Italian WP, only for the four most abundant elasmobranchs species, *Raja clavata* (GSA 9, 11 and 16), *R. asterias* (GSA 9 and 11), *R. miraletus* (GSA 18) as commercial species, and *Galeus melastomus* as bycatch species (GSA 9, 10 and 11), there will be a biological sampling programme associated (see Tables 1B and 1C).

Tables 4A, 4B and 4C

In order to identify the metiers to be sampled, the ranking system at GSA level, as described in the GFCM-DCRF (2018), has been applied. For sampling purpose, only the major metier will be considered. Official statistics (landings, effort and value data) have been used to apply the ranking system. Sampling strategies in each GSA will be a mix of concurrency-at-sea (sampling directly on board by observers and scientists) and concurrency-at-landing site (sampling directly on landing site, at market etc.). The target population for the reference year will be the number of fishing trips by metier of the previous years. Fishing trip should be considered equal to fishing day. The frame population is a subsample of the target population: it will be a selection of fishing trips, mainly on spatial (GSA) and time stratification basis (quarterly) with measurements of the composition of the catch in order to detect seasonal differences in the demographic structure and composition of the landings for different metier. The sampling will be accomplished according to the methods of a two-stage stratified random sampling: the sampling unit belonging to the metier will be the fishing trip. The number of fishing days to be sampled has been defined proportionally to the effort (number of days at sea for each metier) and the landings.

AS regards discards sampling, Italy will follow the discard sampling program as recommended by the Regional Coordination Group (see Annex IX of the RCMMed&BS-LP 2016, and the updated table in the last RCGMed&BS, 2019).

Finally, concerning the establishment of a recovery plan on Mediterranean swordfish, the workplan already includes the collection of adequate scientific information for highly migratory pelagic species in the Mediterranean. The recovery plan on Mediterranean swordfish requests the collection of additional specific information related to fishing activities and specific data on the catches, in the smallest time-area possible. The sampling schemes already planned will be adapted in order to reach the level of details requested by the recovery plan on Mediterranean swordfish.

A summary of the methodologies applied for the estimation of demography of landings, discards, the calculation of growth and reproduction parameters, and the related precision levels, it is provided under the following link <http://dcf-italia.cnr.it/reserved/lineeguida/1>.

REGION: Other regions

The Italian Fleet Register includes 8 vessels with a license to operate outside the Mediterranean waters. The activity of these vessels depends on fisheries agreements in place and may vary every year. Till now there has been no requirement for Italy to sample these two fisheries, as recommended in RCG LD reports. Available landing and effort data of these vessels operating both in the CECAF and IOTC areas will be sent to the RCM Long Distance Fishery. Up to now, no biological sampling has been implemented for those vessels, they only have a national obligation to fulfil logbooks. Italy will be considered further recommendations of the RCM

long distance fisheries..

(max 900 words per region)

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

2. Deviations from the Work Plan

The 2020 activities were impacted by COVID-19 pandemic, thus it was not possible for scientific observers to embark onboard fishing vessels. This restriction continued almost in every GSA also after the first lockdown period, occurring from March to May 2020, given the implementation of social distancing rules and the limitations for travelling. For this reason the observations onboard were carried out, where possible, using a self-sampling approach, based on the fishermen collaboration to collecting information on discards. The consequences of the COVID-19 outbreak thus affected the sampling occasions related to the concurrent sampling at sea, as the vessels more available to collaborate could be selected. However, samplings for the biological variables have been performed to evaluate the quarterly length distribution of species in the catches, and the quarterly volume of discards. Data have been collected by métier referred to level 6 of the matrix defined in Appendix IV of the DCF and agreed at Regional Level. The commercial fraction was sampled as usual almost in all the GSAs. Fluctuations in % of achievement of planned PSU may occur in some métier due to difficulties in finding vessels using the specific gear, seasonal fishing activity and thereafter bad meteo-marine conditions. Overall, all the identified métier has been sampled adequately in all the GSAs. In GSA10, GSA16 and GSA17 due to the COVID-19 pandemic, data provided are partial, due to closing of the laboratories.

3. Action to avoid deviations

It is expected that regional activities and implementation of the results of the STREAM project and of the ongoing project MARE/2020/08 (SI2.705484) - Strengthening regional cooperation in the area of fisheries data collection in the Med & BS-Streamline will improve the sampling plan for biological data

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

1. Evidence of data quality assurance

MEDITERRANEAN SEA - SAMPLING SCHEMES FOR DEMERSAL AND SMALL PELAGICS

Evidence of data quality assurance

Information on the QAF for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided.

The collection and analysis of the data were carried out in accordance with the "Guidelines for data collection biological on the state of fishing resources "(<http://dcf-italia.cnr.it/>).

The technical and biological data collected during the sampling activities of the commercial catches and the discards was archived and validated using different data entry and processing programs.

In general, the methodology used to guarantee the quality of the data collected and stored in the database follows the philosophy used by the functions implemented in the R COST package (Jansen & al., 2009), developed within the project funded by the European Commission. COST includes functions that allow to import data in SDEF format (Standard Data Exchange Format), a format also defined during the aforementioned project and subsequently adopted as a standard by different data management and analysis systems (e.g. Deliverable.4.2 - Tools for data in compliance sizes in MARE/2014/19 Med & BS) to solve problems related to the conformity of data sets with specific codes (controlled vocabularies, lists of permitted values, range of numerical values, etc.). According to the results of the European project MARE/2016/22 STREAM "Strengthening Regional cooperation in the area of fisheries biological data collection in the Mediterranean and Black Sea", improvements in sampling procedures will be introduced through the production of optimized sampling scenarios that can be included in the future Work Plans. However, these implementations could not be applied in the current year given the limitation in the activities caused by the COVID_19 outbreak.

Sampling design

Information on the sampling design for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided. The sampling plan is based on a complementary concurrency-at-sea strategy (direct sampling by on board observers) and concurrency-at-landing site (sampling at the landing sites). Unfortunately the implementation of the forms this year was problematic given the COVID_19 pandemic. It must be considered, in addition, that many vessels, especially those of small-scale fishing, do not have the requisites and safety equipment necessary for the boarding of additional personnel compared to the normal crew. In these cases, the sampling method was performed at the landing. The frame is a sub sample of the target population that is a selection of fishing trips with temporal stratification in quarters, to grasp seasonal differences in the demographic structure of commercial capture (landing and discard).

Sampling implementation

Information on the sampling design for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided. In each observed fishing day, for each of the sampled vessel, the weight of the total commercial catch, distinct by species and commercial categories, was recorded, and the weight of the discard by species (when foreseen) was recorded too. A sample of known weight per category was taken to allow the raising procedure of length and age composition of the sample to catches landed and discarded. The sample sizes for the various listed biological variables (individual information by length, age, individual weight, sex, maturity) are given in the Excel table "1C: Sampling intensity for biological variables".

Data capture

As far as possible, data collection took place according to the provisions of the Work Plan. In the future, the actions will be aimed at ensuring time coverage (quarters) as consistent as possible with the sampling strategy. Moreover, as far as possible, under and over-sampling will be mitigated, in particular for the biological variables related to maturity, sex and individual weight, while respecting the objectives of representativeness of the size structures and the biological parameters.

Finally, for the future, the tools made available by the following projects will be considered and applied: MARE/2016/19 (SI2.705484) - Strengthening regional cooperation in the area of fisheries data collection in the Med & BS and MARE/2016/22 "Strengthening REgional cooperation in the area of fisheries biological data collection in the Mediterranean and Black Sea, STREAM (SI2.770115)".

The use of these tools may help to better focus and direct the sampling effort for the different biological variables, as well as to outline an ad hoc sampling approach to be included in future WorkPlan.

Data Storage

Data on biological sampling (primary data, métier-related variables, stock-related variables) are uploaded to the National DCF DataBase. This database has been recently upgraded but is still currently in a review process to align its functionality with the new EUMAP. It is also expected that in the future a contribution to this aspect will be given by the project MED&BS RDB-Fisheries Information System Grant Agreement Number MARE/2020/08 -(512.839444).

Data processing

Information on data processing for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided.

MEDITERRANEAN SEA - SAMPLING SCHEMES FOR LARGE PELAGICS

Evidence of data quality assurance

Information on the QAF for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided. Quality indicators, and any related problems, for stock related variables of large pelagic species are calculated yearly at regional level (RCGLP). Regional group is continuing the exercise for calculating the quality indicators figures for stock related variables for large pelagic, trying to standardize and optimize the methodology at Regional Level. For the future, the tools made available by the following project will be used: MARE/2016/22 "Strengthening regional cooperation in the area of fisheries data collection", Annex 3 - Biological data collection for fisheries on highly migratory species, Biological data collection for fisheries on highly migratory species (RECOLAPE).

Sampling design

Information on the sampling design for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided. The sampling plan is based on a complementary concurrency-at-sea strategy (direct sampling by onboard observers) and concurrency-at-landing site (sampling at the landing sites).

Sampling implementation

Information on the sampling design for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided. Data were collected through interviews at the landing sites and direct observations on board, with at least one sample port for each GSA, identified on the basis of its importance for the fishing of the large pelagics. The samples are temporarily allocated according to the fishing season and the application of the international rules that regulate the fishing activities of some of the target species (bluefin tuna, swordfish and lampuga mainly) that clearly affect the activity. In order to guarantee the quality of the data collected with respect to the parameters established at international level and in order in order to make such data comparable with those of the other countries, the statistical data collection manual provided by the ICCAT was used (ICCAT. 2006-2016, ICCAT Manual International Commission for the Conservation of Atlantic Tuna In: ICCAT

Publications [on-line] Updated 2016. <http://www.iccat.int/en/ICCATManual.asp>, ISBN (Electronic Edition): 978-92 -990055-0-7).

The sample sizes for the various biological variables (individual information by length, age, individual weight, gender, maturity) are given in table "1C: Sampling intensity for biological variables".

Data capture

Data collection took place according to the provisions of the Work Plan. However, it should be noted that the collection of the data for the large pelagic species is complicated both by the lack of presence of some of these species and by the numerous regulatory limitations established at Community level.

Data Storage

Data on biological sampling (primary data, métier-related variables, stock-related variables) are uploaded to the National DCF DataBase. This database is currently in a review process to align its functionality with the new EUMAP.

Data processing

Information on data processing for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided.

MEDITERRANEAN SEA - SAMPLING SCHEMES FOR EEL

Evidence of data quality assurance

Information on the QAF for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided. During 2020, activities were implemented as planned within the WP. All methodological activities for monitoring the catches, for data expansion, for the evaluation of the parameters of effort and for biological sampling, including the methods of treatment of the samples, have been conducted by referring to the provisions of the 2017-2019 Work Plan, in turn drafted by doing reference to the

coordination work conducted within the EIFAAC / ICES / GFCM Working Group on Eel in the course in the last few years (2015-2018) and in the specific Workshops organized by the WGEEL, also in accordance with the provisions of Regulation 1100/2007 and by the National and Regional Management Plans Italy. In particular, reference is made to Working Group WKEELDATA 2017 and WKTEEL 2018.

Sampling design

Information on the sampling design for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided.

Sampling implementation

Information on the sampling design for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided. The sample sizes for the biological variables (individual information by length, age, individual weight, gender, maturity) are given in table "1C: Sampling intensity for biological variables". Some critical issues for the activities concerning the species *Anguilla anguilla*, are linked to the need to provide the catches in the individual EMUs in order to set the biological sampling, to the particularity of the biological cycle of the species, to its fragmented distribution on the territory, to its seasonal articulation and to the extremely heterogeneous types of exploitation. Furthermore, attention is paid to the need for coordination between different modules of the WP for the collection of EEL commercial and recreational fishing data, and activities related to actions currently underway at European level (specific monitoring, stock assessment, preparation of Progress Reports etc.), which derive from the application of EC Regulation 1100/2007 and which impose a series of specific actions for this species at both European and national levels. For the first time, the Fisheries Offices of the administrative regions (EMU involved in the *Anguilla* Regional Plans) have been directly involved to carry out the survey. The operational protocol for the surveys was shared with the regional offices (questionnaires, interview methodology, data archiving system) and the interviews were conducted with their collaboration as far as possible. Where there have been difficulties in meeting the fishermen, telephone interviews were conducted.

Data capture

Data collection took place according to the provisions of the Work Plan.

Data Storage

Data on biological sampling (primary data, métier-related variables, stock-related variables) are uploaded to the National DCF DataBase. This database is currently in a review process to align its functionality with the new EUMAP.

Data processing

Information on data processing for the biological sampling is reported in table 5A, where the web links to the reference documents are also provided.

OTHER REGIONS – ALL SPECIES

No activities for biological sampling were implemented in 2020.

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

SECTION 5: DATA QUALITY

Text Box 5B: Quality assurance framework for socioeconomic data

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

Socio-economic data for the fishing fleet- all data collection schemes

Evidence of data quality assurance

The quality indicators of the estimates relating to 2019 and classified by type of variable, supra-region, fishing technique and length class, are based on the calculation of three indicators: the achieved sampling rate, the percentage response rate and the coefficient of variation. All the quality indicators have been calculated within the database of aggregated data for each stratum of the fleet and for each variable being surveyed.

The calculation of the coefficient of variation for the variables of the sample survey is based on the algorithm programmed in R environment, in which the CV is estimated on the basis of the weights and probability of inclusion of the first order (or probability of inclusion in the sample) and second order (simultaneous presence of i and j units in the sample), using the algorithm of Hanurav-Vijayan, which defines a series of steps to carry out the extraction of a pre-set sample number (n), without replacement, and with probability of inclusion in the sample for the single non-uniform units, with respect to sampling with variable probability (CPV) or PPS (Probability proportional to size) or π PS (inclusion probability proportional to size).

Section P3 Impartiality and objectiveness

Not relevant, (Yes in table 5B).

Section P4 Confidentiality

Not relevant, (Yes in table 5B).

Section P5 Sound methodology

Not relevant, (Yes in table 5B). Information on this principle is explained in Text boxes 3A.

Section P6 Appropriate statistical procedures

Not relevant, (Yes in table 5B). The documented statistical procedures are available at:

<https://dcf-italia.cnr.it/web/#/links/linee-guida> and they are not confidential.

Section P7 Non-excessive burden on respondents

Not relevant, (Yes in table 5B).

Section P8 Cost effectiveness

Not relevant, (Yes in table 5B).66

Section P9 Relevance

Not relevant, (Yes in table 5B).

Section P10 Accuracy and reliability

Not relevant, (Yes in table 5B). Description of methodologies used on data quality are reported in Text Box 3A.

Section P11 Timeliness and punctuality

Not relevant, (Yes in table 5B)

Section P12 coherence and comparability

Not relevant, (Yes in table 5B)

Section P13 Accessibility and Clarity

Are methodological documents publicly available? Yes. Are data stored in databases? Yes. Where can methodological and other documentation be found? National web site for the Data Collection Framework

Provide the web link, if documentation is publicly available: <http://dcfitalia.cnr.it/reserved/lineeguida/1>

Socio-economic data for the aquaculture sector

Evidence of data quality assurance

The methodology used for the calculation of quality indicators follows the definitions reported in the manual "Quality guidelines for the DCF" (Moura, 2016).

Section P3 Impartiality and objectiveness

Not relevant, (Yes in table 5B).

Section P4 Confidentiality

Not relevant, (Yes in table 5B).

Section P5 Sound methodology

Not relevant, (Yes in table 5B). Information on this principle is explained in Text boxes 3B.

Section P6 Appropriate statistical procedures⁶⁷

Not relevant, (Yes in table 5B). The documented statistical procedures are available at: <http://dcf-italia.cnr.it/reserved/lineeguida/1> and they are not confidential.

Section P7 Non-excessive burden on respondents

Not relevant, (Yes in table 5B).

Section P8 Cost effectiveness

Not relevant, (Yes in table 5B).

Section P9 Relevance

Not relevant, (Yes in table 5B).

Section P10 Accuracy and reliability

Not relevant, (Yes in table 5B). Description of methodologies used on data quality are reported in Text Box 3B.

Section P11 Timeliness and punctuality

Not relevant, (Yes in table 5B)

Section P12 coherence and comparability

Not relevant, (Yes in table 5B)

Section P13 Accessibility and Clarity

Are methodological documents publicly available? Yes. Are data stored in databases? Yes. Where can methodological and other documentation be found? National web site for the Data Collection Framework
Provide the web link, if documentation is publicly available: <http://dcfitalia.cnr.it/reserved/lineeguida/1>

Socio-economic data for the processing sector

Evidence of data quality assurance

The sample survey for the processing industry falls into the category of non-probability sample surveys (NSS), since the probability of inclusion of the units detected, i.e. the enterprises for which the balance sheet is publicly available, is unknown. As a result, the selected sample cannot strictly be regarded as a random one since not all the enterprises of the frame population are obliged to publish the balance sheet and therefore not all of them have the same opportunity to be selected within the sample. To overcome this problem, in the estimation of quality indicators, it is suggested by the Commission Implementing Decision (EU) 2018/1283 of 24 August 2018 to assume that sampling units of non-census strata are randomly selected. By this approach, the calculation of the quality indicators follows the same approach used in the case of SRS. The quality indicators of the estimates relating to 2018 are based on the calculation of three indicators: the achieved sampling rate, the percentage response rate and the coefficient of variation (CV). All the quality indicators have been calculated within the database of aggregated data for each stratum (size class and NUTS2).

According to the Fish processing data call release protocols, the CV calculated for each variable has been converted into precision levels (<https://datacollection.jrc.ec.europa.eu/dc/proind/eum/templates>). The level of precision depends on the value of the coefficient of variation (CV) where the maximum level 4 refers to an exhaustive and complete data collection, level 3 to a coefficient of variation equal to or less than 2.5%, level 2 refers to a maximum CV of 12.5%, level 1 to a maximum CV of 20% and level 0 to a CV above 20%.

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Section P3 Impartiality and objectiveness

Not relevant, (Yes in table 5B).

Section P4 Confidentiality

Not relevant, (Yes in table 5B).

Section P5 Sound methodology

Not relevant, (Yes in table 5B). Information on this principle is explained in Text boxes 3A.

Section P6 Appropriate statistical procedures

Not relevant, (Yes in table 5B). The documented statistical procedures are available at: <http://dcf-italia.cnr.it/reserved/lineeguida/1> and they are not confidential.

Section P7 Non-excessive burden on respondents

Not relevant, (Yes in table 5B).

Section P8 Cost effectiveness

Not relevant, (Yes in table 5B).

Section P9 Relevance

Not relevant, (Yes in table 5B).

Section P10 Accuracy and reliability

Not relevant, (Yes in table 5B). Description of methodologies used on data quality are reported in Text Box 3A.

Section P11 Timeliness and punctuality

Not relevant, (Yes in table 5B)

Section P12 coherence and comparability

Not relevant, (Yes in table 5B)

Section P13 Accessibility and Clarity. Are methodological documents publicly available? Yes. Are data stored in databases? Yes. Where can methodological and other documentation be found? National web site for the Data Collection Framework. Provide the web link, if documentation is publicly available: <http://dcfitalia.cnr.it/reserved/lineeguida/1>

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