



## Commission Implementing Decision (EU) 2016/1701

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

Commission Implementing Decision (EU) 2016/1251 of 12 July 2016 adopting a multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019.

## Commission Implementing Decision (EU) 2016/1701

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

## Commission Implementing Decision (EU) 2018/1283

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

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

## **2019**

Version 1

[Rome, 28 May 2020]

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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, Chapter IV of the multiannual Union programme and Article 2, Article 4 paragraph 1 and Article 8 of the Decision (EU) 2016/1701. This box is applicable to the Annual Report.

#### MEDITERRANEAN SEA

##### 1. Evidence of data quality assurance

In the sampling process of the commercial catch, the "Guidelines for the biological data collection of the National Work Plan for data collection" were used as a reference. These guidelines are available on the Italian DCF website (<http://dcf-italia.cnr.it>). 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: Planned regional and international coordination).

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

##### 2. Deviations from the Work Plan

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

General reasons for deviations from the Work Plan in terms of planned vs. achieved are as follows.

General justifications for cases of "over-sampling" for some variables (e.g. length) may be due to several factors, such as to adequately cover of i) all classes of the length distribution of the species considered; ii) the metier approach; iii) the size of sampled vessels (as far as possible); iv) the seasonality v) the sampling substrates at the local geographical level (local fisheries) and the vi) concurrent sampling. For the other variables there is both the need to adequately cover all classes of the length distribution of the species considered, the sexes, the quarters, the sampling substrates at the local geographical level (local fisheries). In addition, the estimate of the number of individuals to be sampled in the WP was based on what was observed in the previous three years, but some species showed greater abundance and therefore it was possible to proceed with a more robust sampling. Some species (e.g. *Mugilidae*, *Lophius spp.*, *Istiophoridae*, *Dicentrarchus labrax*, *Raja clavate*, *Auxis rochei* etc.) are not target (or are rare), and cannot be represented, in the catch composition of the metier selected for sampling purposes (based on the ranking system results); 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 selected for sampling.

It should be noted that GSA10 and GSA16 reported some partial data ("under-sampling") in table 1C because some laboratory analysis were not finalized due to the pandemic restrictions. The unavailability of the laboratories since the beginning of March 2020 made it impossible to complete the biological material processing of part the individuals sampled in 2019.

The sub-sampling in the surveys cannot be considered an issue because it is mainly linked to the characteristic of the experimental gear (e.g. in the case of Medits), to the seasonality of the survey, to the standard duration of each fishing haul etc.

In table 1C, for certain areas (e.g. in GSA 9), some species collected during the demersal survey (i.e. Medits), and not included in the planned activities for the AWP 2019, have been included in the present AR table.

Finally, the low occurrence of *Thunnus alalunga* is mainly due to the fact that fishing takes place in areas far from the coast, the unfavorable weather conditions during the 2019 fishing season has often prevented these areas from being reached.

3. *Actions to avoid deviations.*

Despite some partial coverage and low occurrence of few species, the results achieved, in terms of sample size, are, as far as the biological variables, on average higher than the targets. In the future the 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, over-sampling, in particular for the biological variables related to maturity, sex and 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 assessed and eventually 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 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).

## OTHER REGIONS

1. *Evidence of data quality assurance*

In 2019, 8 vessels operated outside the Mediterranean waters. 7 vessels operated in the Atlantic Ocean and their activity, targeting mainly cephalopods (OTB\_CEP  $\geq 70$  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 regularly 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*

No deviations.

3. *Actions to avoid deviations.*

Not applicable.

(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 multiannual Union programme and Article 2, Article 3 and Article 4 paragraph 1 of the Decision (EU) 2016/1701. This box is applicable to the Annual Report. This box is intended to provide information on the design, implementation and analysis of all components of sampling schemes/ surveys that are listed in Table 1D.

#### *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 (2005) previously taken as a reference. Overall, the survey identified a universe of boats potentially dedicated to fishing for large pelagics equal to 2953.

##### *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).

400 interviews were carried out. The interviews were carried out through monitoring in sample ports, considering at least one sample port per region. The interviews have been administered through specific questionnaires to a panel of fishermen, identified through visits conducted on randomly selected dates and ports, interviewing the fishermen found available at the moment of visits.

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. The universe is the list of dedicated boats, coming from a census survey, as previously described. The interviews were administered to a panel of fishermen, chosen through visits in ports and dates randomly selected, and results were then reported to the universe of boats.

##### *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), without using boats, following as far as possible the behavior of the species.

### *2. Type of survey*

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

### *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 Plans and following the recommendations of the EIFAAC/ICES/GFCM Working Group and Workshops on eel over the past years (2015-2018).

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

### *4. Data Analysis and processing*

The estimate of the total amount of recreational fishermen eels were obtained on the basis of information provided by various recreational fishermen's organizations. The survey allowed to collect information related to 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 divided by region and habitat type.

(max. 900 words per survey)

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

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

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

### *1. Aim of pilot study*

According to EU Reg. 199/08, “recreational fisheries’ means non-commercial fishing activities exploiting living aquatic resources for recreation or sport”. This definition will be considered for the aim of the present pilot study.

A ministerial decree of 6 December 2010, aimed at promoting the recognition of the consistency of the sport and recreational fishing in the sea, states that “all those wishing to go fishing in the sea will have to make a communication to provide some basic information such as names and addresses, the type of fishing practiced and the fishing areas”. These communications are stored in a database managed by the Ministry of Agricultural, Food and Forestry Policies (MIPAAF) and will constitute the “universe” for the pilot study.

Although marine recreational fisheries are a very popular activity in Italy, with a total number of registration of more than 1 million units (according to ministerial decree 6 Dec. 2010), only partial statistical programmes are in place for the estimation of its landings and economic impact.

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 plane. The outcomes of the pilot study will be discussed at marine region level and will allow the definition of the design and the extent of future national surveys of recreational fisheries.

Other objectives of the pilot study are: a) to determine the number of recreational fishermen, cross-checking and integrating the current list of registered fishermen; b) to monitor fishing activity in terms of gears/equipment used and time dedicated to this activity; c) to collect some basic information on recreational catches (species, weight and number); d) to collect macro-data on the overall economic impact of the activity.

### *2. Duration of pilot study*

The pilot study will be implemented in 2017 and 2018.

Results will be available by the end of 2018 and will be presented and discussed at regional level.

### *3. Methodology and expected outcomes of pilot study*

The pilot study will be implemented into two different steps.

The first step will aim at validating the official database of recreational fishermen registrations managed by MIPAAF and established under ministerial decree of 6 Dec. 2010. During this step a screening survey will be conducted with the following objectives:

- o Characterization of the population
- o Estimation of the number of units per category

The ministerial database will be validated and cross-checked with additional information collected through an ad hoc field survey along the Italian coast.

Once the population of recreational fishermen is set up and defined, the second step will aim at estimating the following parameters:

1. activity per category (number of fishing trips and fishing days)
2. volume of landings and composition by species
3. additional independent data on catches, size and composition of fish caught by recreational fishermen
4. macro-data on the overall economic impact of the activity.

The data collection methods will follow a mixed strategy that will consist of:

- Probability sampling: stratified random sampling without replacement, where each sample unit will be chosen randomly from the population, for parameters 1&2 of the previous list (activity per category and volume of landings and composition by species).

The population will be based on the list of registered fishermen, validated and completed through the field survey (step 1). All selected recreational fishermen will be contacted through mail and telephone calls and requested to compile a questionnaire on activity and catches. The questionnaire will be designed in the form of a mobile application for Android and iOS operating systems. The design of the questionnaire will follow the guidelines and glossary developed by the ICES WGRFS.

- Non-probability sampling: where the sample units will participate to the survey on a voluntary basis, for parameters 3&4 of the previous list (additional independent data on catches, composition of fish caught by recreational fishermen and macro-data on the overall economic impact of the activity). This small-scale 'on site' sampling program will be defined in a way that ensures representative coverage of the target population and minimizes bias.

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.

(max 900 words)

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

The pilot study was implemented in 2018 and 2019. Results have been made available in June 2019. Provisional results have been presented in the WS of the RCG Med&BS on recreational fisheries (Ancona, April 2019)..

Two case studies were identified in Tuscany (Tyrrhenian sea) and Marche (Adriatic Sea), in which interviews were conducted on a random sample of fishermen to validate the population of sport fishermen and also to cross check the ministerial database. A national survey has been then extended to all the Italian regions.

The following information have been estimated:

- the catches of recreational fishing of some species of interest, also in common with the species considered in the commercial fishing;
- the percentage that the catch of these species by recreational fishing represents compared to the total catch (professional and recreational);



- catches of other species, important for recreational fishing but not relevant for the commercial fisheries;
- some macroeconomic reference parameters.

Finally, on the basis of these estimates, a list of species was proposed to be considered for any continuation of investigations on recreational fishing, considered a reference percentage threshold of recreational catches compared to total catches (professional and recreational).

*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.

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

The statistical approach used in the pilot study should be strengthened through at least another year of fieldwork. Therefore, the Italian WP 2020-2021 foresees the continuation of the study until the end of 2021, before being able to arrange a routine and systematic 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 multiannual Union programme and Article 2 of the Decision (EU) 2016/1701.

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

#### *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)

#### *Were the planned number achieved?*

Yes, according to the following considerations.

The objective of the third year of the pilot study was to expand the application of the monitoring protocols developed in previous years in other EMUs.

During the year 2019, the monitoring protocols have been extended to other EMUs, EMU-TOS in which a costal lagoon habitat has been involved and in EMU-ER Emilia Romagna with a riverine environment.

The monitoring protocols have been verified in order to adapt to the local environmental context and local operational needs of the newly involved EMUs.

#### *Recruitment monitoring – glass eel*

##### *EMU Emilia Romagna: Fiume Po (RIV)*

The monitoring site is located at the Po River, Goro estuary, in the area of Po Delta, north of the Sacca di Goro.

The monitoring was carried out with the installation of 2 rows of trap nets (namely bertovelli). Monitoring extended for 3 months from October till December 2019.

*EMU Toscana: Laguna di Orbetello (LGN)*

The monitoring site is the Fibbia channel. The monitoring was carried out by 2 rows of fyke-nets (fine mesh, for glass eel catch) . Monitoring extended for 3 months, from October till December 2019 for 6 consecutive days each month.

Monitoring of yellow eel

*EMU Emilia Romagna: Fiume Po (RIV)*

The monitoring site is located at the Po River, Goro estuary, in the area of Po Delta, north of the Sacca di Goro.

The monitoring was carried out by fyke-nets, installed along the bank in 3 parallel rows of 10 fyke-nets, for a total of 30 fyke-nets.

Monitoring was conducted in July and replicated in October. The duration of the monitoring was 3 consecutive days per month in each monitoring station.

*EMU Toscana: Laguna di Orbetello (LGN)*

The monitoring site is the Laguna of Orbetello.

The monitoring was carried out with the installation of a square net fence (100 m each side, h. 1.8 m, 12 mm mesh), thus enclosing a lagoon area of about 1.0 ha. Within the enclosure, a total of 16 fyke-nets were installed. Monitoring was conducted in October for 5 consecutive days each month, by verifying catch each morning.

Monitoring of silver eel

*EMU Emilia Romagna: Fiume Po (RIV)*

The monitoring site is located at the Po River, Goro estuary, in the area of Po Delta, north of the Sacca di Goro.

The monitoring was carried out by fyke-nets, installed along the bank in 3 parallel rows of 10 fyke-nets, for a total of 30 fyke-nets.

Monitoring extended from October till December 2019, for 3 consecutive days per month in each monitoring station.

*EMU Toscana: Laguna di Orbetello (LGN)*

The monitoring site is the Laguna of Orbetello, channel of Fibbia.

The monitoring was carried out at 2 sampling stations, one per bank, by installing 2 barriers perpendicular to the shore ( 10 mm mesh) ending with 1 fyke-net at each barrier end.

Monitoring was conducted from October till December 2019 for 5 consecutive days each month.

The results of eel catches are reported separately for stage, in the two EMUs and for each monitoring period. The CPUE has been calculated, expressed as g/EU/day and n. ind./UE/day, calculated both independently for the monitoring stations and as average for the entire period.

(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 multiannual Union programme and Article 2 of the Decision (EU) 2016/1701. 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 2019.

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, with reference to the monitoring of bycatch according to EC Reg. 812/2004, 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.

The monitoring activity of accidental catches in the pelagic trawl took place from January to December 2019. Observer monitored 79% of planned trips in the GSA 16 and 89% of planned trips in the GSA 17. Only one accidental capture of *Tursiops truncatus* was registered in the GSA 16. The greater number of incidental catches was recorded in GSA 17, represented mainly by the elasmobranchs. In particular, *Mustelus spp.* were caught. (47), *Myliobatis eagle* (71), *Pteroplatytrygon violacea* (67) and *Squalus acanthias* (45). Furthermore, 25 *Caretta caretta* sea turtles, 1 *Tursiops truncatus* and 10 *Alosa fallax* were registered.

*Activities under EUMAP 3 a): incidental by-catch of all birds, mammals and reptiles and fish protected under Union legislation and international agreements*

The activities followed the 2017 recommendation of the RCG Med&BS on pilot studies for the assessment of incidental catches of birds, mammals, reptiles and fish. RCG Med&BS 2017 recommends MS to follow the planned monitoring programme of the GFCM on the incidental catch of vulnerable species, and carry out the following pilot studies:

- 2018: Pilot study for assessing incidental catches of vulnerable species from bottom trawlers
- 2019: Pilot study for assessing incidental catches of vulnerable species from longlines

For the identification of the species the "*Identification des espèces pour les besoins de la pêche*" (Fisher et al., 1987), the "*Practical Guide to the identification of Mediterranean Sea breeds*" (Serena et al., 2010), and the "*Monitoring incidental catches of vulnerable species in the Mediterranean and Black Sea. Methodology for data collection*" (FAO 2018), have been followed.

With reference to the monitoring of the incidental by catch of vulnerable species (birds, mammals, reptiles and fish) in the longlines fisheries in 2019, the methodology used for the monitoring of the incidental bycatch of vulnerable 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, 2016). The incidental bycatch vulnerable species in longlines fisheries has been monitored through a fleet observer programme based on the importance of the fleet, the samplings were concentrated on boats that carry out swordfish fishing, as well as some samples on boats that carried out tuna fishing.

A total of 429 fishing days was monitored: the days monitored through the onboard observations were 36, while 393 were the fishing days monitored by self-sampling. 198 days were monitored on surface

longliners, 231 on bottom longliners. 20 boats have been used in total through self-sampling and on-board observations.

The incidental by catch of PET species was recorded using standardized forms and logbooks. When possible, morphometric data (e.g. size, weight, etc.) were recorded on the individuals caught.

## 2. Deviations from Work Plan

With reference to the monitoring of bycatch according to EC Reg. 812/2004, due to the administrative delays in starting a scholarship, the monitoring activity scheduled for GSA 16 began in April 2019.

From 18 February 2019, in GSA 17 the monitoring activity in the port of Pila di Porto Tolle was suspended due to the refusal of the Fishing Associations to host the scientific staff involved in Task 5.1a on board the fishing vessels. The trips planned for the port of Pila have been redistributed to the Romagna ports involved in the program (Goro, Porto Garibaldi and Cesenatico). The collaboration with the fishermen of Pila was restored only from mid-October 2019.

## 3. Data quality

*- Does the onboard observer protocol contain a check for rare specimens in the catch at opening of the codend? If YES is the observer instructed to indicate if the codend was NOT checked in a haul?*

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 multiannual Union programme and Article 2 and Article 4 paragraph (3) point (b) of the Decision (EU) 2016/1701.

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

#### 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

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 general objective of the pilot study will be to increase the knowledge on predator-prey relations, which are needed for multi-species stock assessments.

## 2. *Duration of pilot study*

The pilot study will be implemented in 2018 and 2019, following suggestions from RCGs in order to share tasks among Mediterranean MSs. In 2018 methods and approaches will be defined and tested. In 2019 the pilot study will continue with data collection activities and data analysis.

Results will be available by the end of 2019 and will be presented and discussed at regional level. Thereafter, based on the outcomes of this pilot study, Member States will determine future data collection specific coordinated at marine region level and based on end-user needs.

## 3. *Methodology and expected outcomes of pilot study*

The methodology to implement the pilot study will be based on the one already proposed in the EU Project “Strengthening regional cooperation in the area of fisheries data collection in the Mediterranean and Black Sea” (AGREEMENT NUMBER – MARE/2014/19 -SI2.705484).

The sampling program will take into account the following criteria (strata), which are known to influence the diet of the investigated species: size class and season.

Stock, fisheries to be monitored, sources of information (i.e. commercial fisheries, surveys) and the exact data to be collected (i.e. number of specimens) will be identified at Regional level in 2017 and in consultation with the relevant end users in the region.

The final results of the pilot study will be presented in a scientific report, with a complete description of methodologies applied (including collection of samples, removal of the stomach contents, identification of the prey items and treatment of the data collected) together with protocols and guidelines for sampling, processing and analyzing the stomach contents.

*(max 900 words)*

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

*Activities under EUMAP 3 a): incidental by-catch of all birds, mammals and reptiles and fish protected under Union legislation and international agreements*

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

*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*

*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*

Except for the estimate of fishing effort exerted by units not equipped with satellite tracking, all other aspects of the pilot study were systematically integrated into the Module V of the Work Plan.



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

This pilot study was structured following the indications of the Chapter III.3.C of EUMAP. The methodology follows the indications of the European Project “Strengthening regional cooperation in the area of fisheries data collection in the Mediterranean and Black Sea” (MARE/2014/19 -SI2.705484, Spedicato, 2016).

The Pilot Study was targeted on the European hake, *Merluccius merluccius*. The main objective was to increase the understandings on the trophic chain and on the pool of resources sustaining the different phases of the life cycle of *M. merluccius*. The Pilot Study carried out in 2019 was aimed at collecting and analyzing hake stomach content on the basis of the working protocol identified in 2018.

The study consisted in a coordinated analysis, involving all the Italian GSAs, of the *M. merluccius* diet, anticipated by a preparatory phase. In the two years of the pilot studies, a total of 2756 hake specimens and 353 stomach contents have been analyzed. The sampling of the stomach contents of hake conducted in the years 2018 and 2019 allowed to outline the main characteristics of the diet of the species.

(max 900 words)

## SECTION 1: BIOLOGICAL DATA

### Text Box 1G: List of research surveys at sea

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

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

#### 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. 8, 2016), 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 Fig. 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., 2015 ) 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 Sea are obliged to carry out Medits surveys yearly in the framework of the EU data collection regulation. Up to now ten Mediterranean EU countries (Italy, France, Spain, Croatia, Greece, Malta, Slovenia, and Cyprus) collaborated in the project and permanent links are maintained with relevant bodies (i.e. RCMMed&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. 8, 2016, MEDITS Working Group: 177 pp.).

5. Explain where thresholds apply

No threshold.

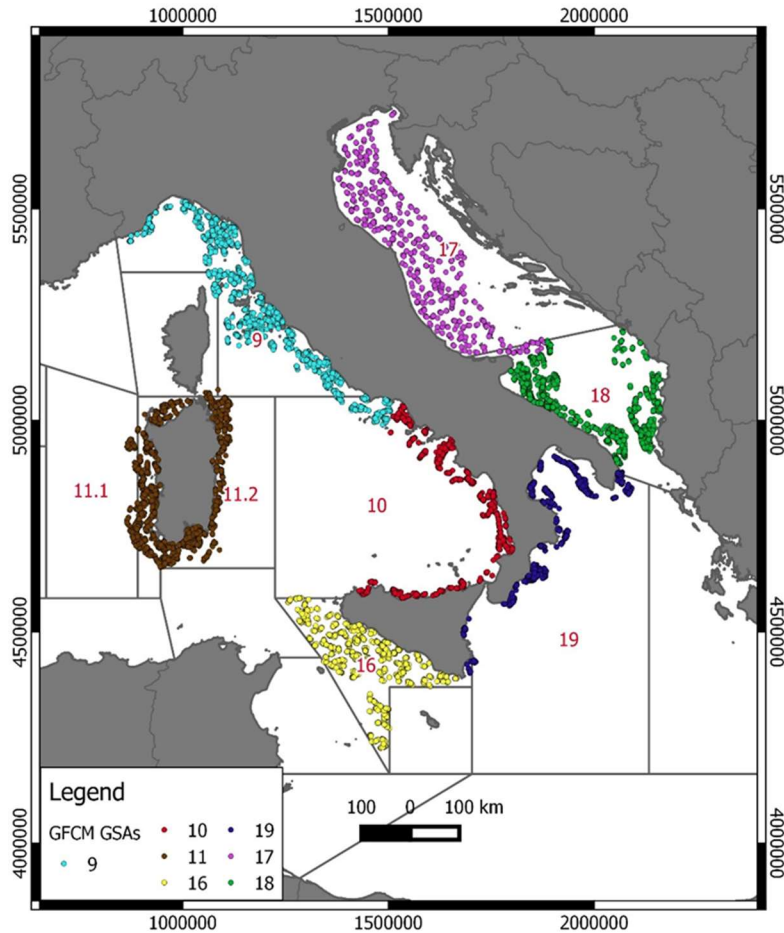


Figure a) MEDITS fishing hauls foreseen in the 7 Italian GSA

### MEDIAS SURVEY (mandatory survey)

#### 1. Objectives of the survey

The Pan Mediterranean Acoustic Survey (MEDIAS) has 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. 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.

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

This research will be based on common protocol (MEDIAS-Handbook, 2017) and will follow a multidisciplinary approach. Synoptically with the acoustic data acquisition, carried out using a multi-

frequency scientific echo sounder system properly calibrated each year, net samplings on small pelagic fish should be performed by means of a pelagic trawl (Tables 1.G, H)

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 demersal surveys). Length frequency distribution of all the caught fish species will be recorded. Age samples of *E. encrasicolus* and *S. pilchardus* will be collected and analyzed. Analysis of acoustic data will be conducted by means of dedicated software for echograms scrutinization.

Further, for an ecosystem based approach environmental monitoring will be performed, thus CTD oceanographic data (temperature, salinity, fluorescence and dissolved oxygen) will be recorded.

*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 survey, performed in spring-summer, should cover a series of areas in the Mediterranean EU MS (Spain, France, Croatia, Italy, Slovenia and Greece) with a standardised methodology. Italy will cover:

- a) Adriatic Sea (GSA 17 and 18; FAO Sub-Divisions 37.2.1 and 37.2.2) – Fig. b)
- b) Tyrrhenian Sea (GSA 9 and 10; Sub-Division 37.1.3) – Fig. c)
- c) Sicilian Channel (GSA 16; FAO Sub-Division 37.2.2) – Fig. d)

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, 2017).

*5. Explain where thresholds apply*

No threshold.

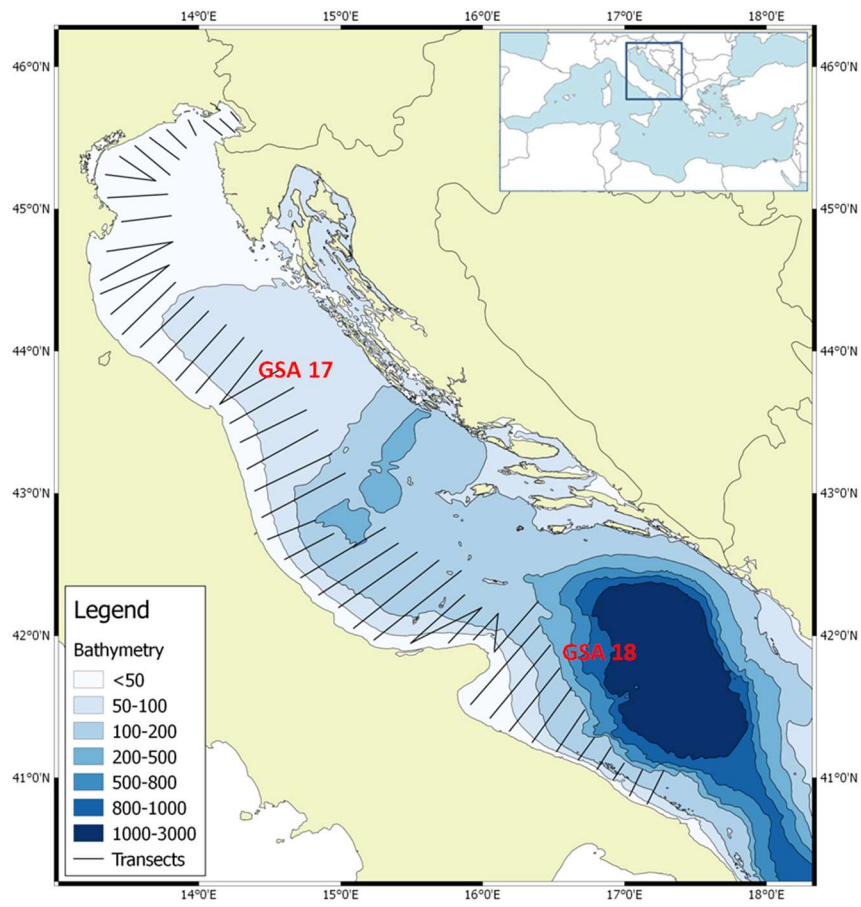


Figure b) Acoustic survey in the Adriatic Sea: GSA 17 and GSA 18; Sub-Divisions 37.2.1, 37.2.2.

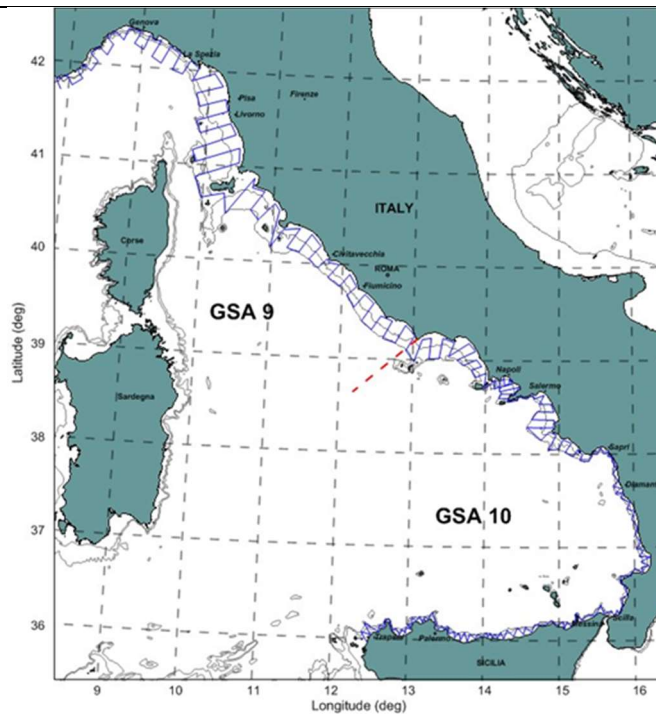


Figure c) Acoustic survey design in the GSAs 9 and 10; Sub-Division 37.1.3.

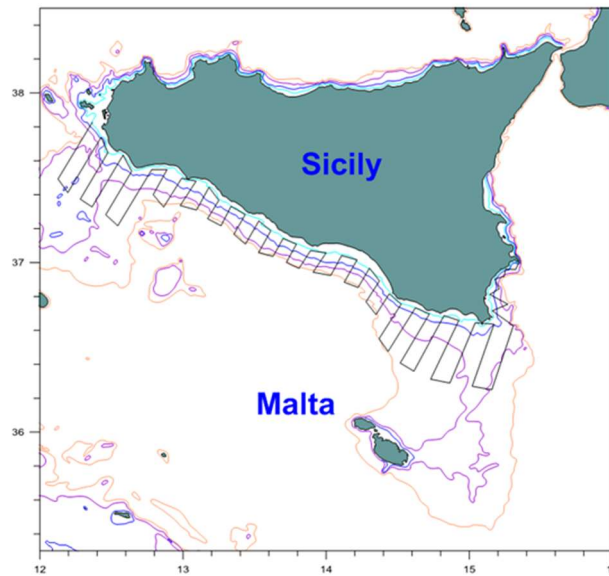


Figure d) Acoustic survey design in the GSA 16; FAO Sub-Division 37.2.2.

## SoleMon survey (non mandatory survey)

### *1. Objectives of the survey*

*Solea solea* is an important resource in the GFCM area. About 22% 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 seize 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 and 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 e). 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 2, May, 2011) 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 Mediterranean level, and with all member States of AdriaMed through common database AtrIS.

### *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 2, May, 2011).

### *5. Explain where thresholds apply*

No threshold.

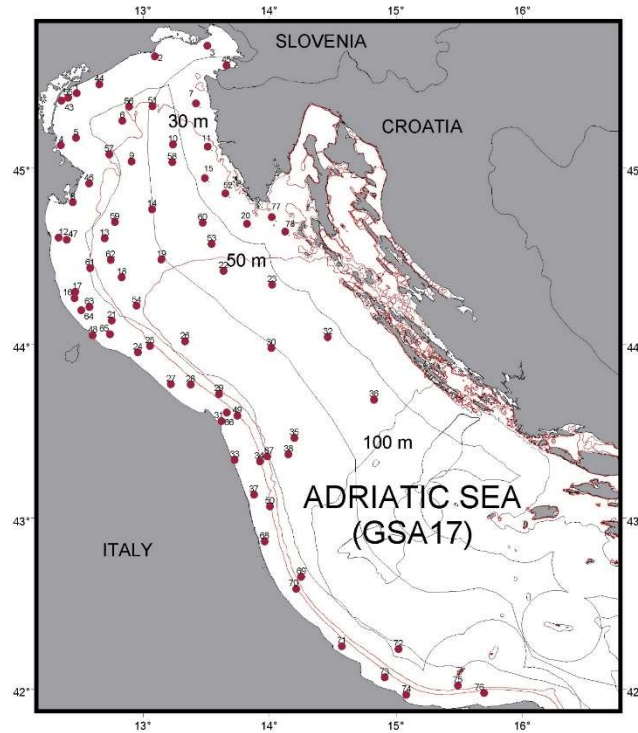


Figure e) SoleMon fishing hauls foreseen in the Adriatic Sea (GSA 17)

#### DREDGERS MOLLUSCS SURVEY (DRES) (non-mandatory survey)

##### 1. Objectives of the survey

Concerning hydraulic dredges for striped venus clam (*Chamelea gallina*) 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). 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 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 will 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 of management plans. The main biometric measurements (length and weight) will be recorded for the two species. Additionally, biological information (sex ratio, maturity, length-weight relationship etc.) will be collected for the striped venus, which has 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 have been conducted following operating standard protocol used on a national scale. A specific survey manual will be prepared in 2018 according to this protocol. Commercial vessels will be used to conduct the surveys. The commercial hydraulic dredge used to harvest *C. gallina* and *E. minor* are similar and will comprise a rectangular cage 3 m wide, weighing 0.6 t, 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* will be carried out in the 13 marine compartments in the Adriatic Sea (GSA 17 and GSA18, see the map below), while surveys for *E. minor* will be conducted in 6 marine compartments (Roma, Gaeta, Napoli, Monfalcone, Venezia and Chioggia; GSA 17, GSA 9 and GSA 10, see the map below). Each



compartment will be surveyed along regularly spaced transect lines perpendicular to the coast (around 2 mile each other, according to the length of each Compartment). Within each transect line, sampling stations will be settled at fixed distances/depths (0.25 nautical miles for *C. gallina*; every 2 m of depth for *E. minor*) until the presence of clams will be detected (usually at a distance corresponding to 12-14 m of depth for *C. gallina* and 6-8 m for *E. minor*). In each sampling station, an area of around 300 m<sup>2</sup> will be surveyed (width of cage 3 m x 100 m of tow). At the end of the tow, the cage will be hauled and its contents spilled into a collecting box. The catch of striped clam will be conveyed to a mechanical vibrating sieve, composed of a sieving plane (19 mm holes diameter), while the razor clams will be sorted by hand. All striped venus clams retained by the sieve will be weighed. For each sample, length frequency distribution of clams will be studied. One of the purposes of biological sampling is to study the fraction of juvenile clams. To sample the juveniles striped venus and razor clams, a net bag sampler with small meshes will be mounted inside the dredge. Size frequency distribution of this sample will be also recorded.

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.

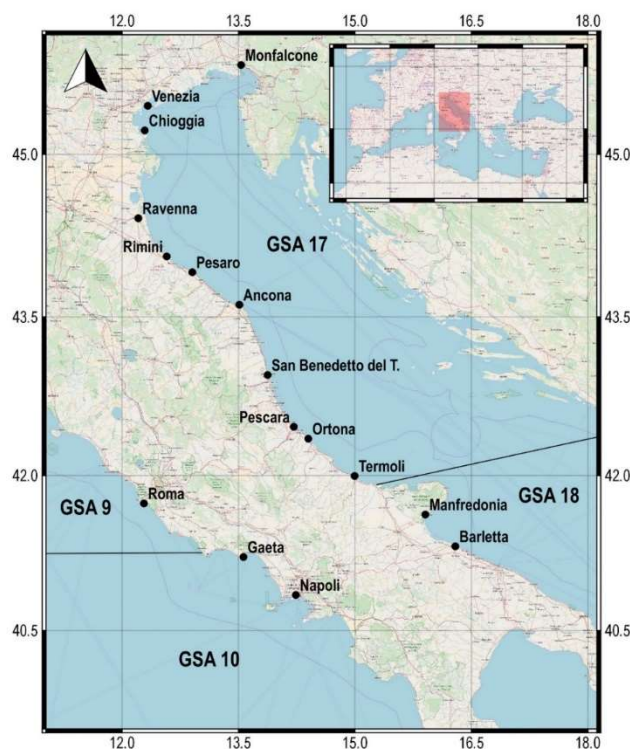


Figure f) DRES survey

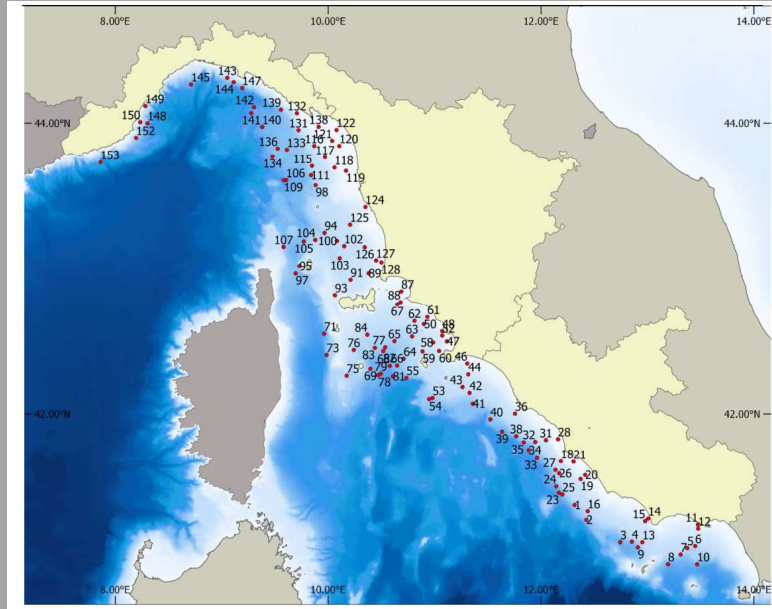
(max 450 words per survey)

MEDITS SURVEY (mandatory survey)

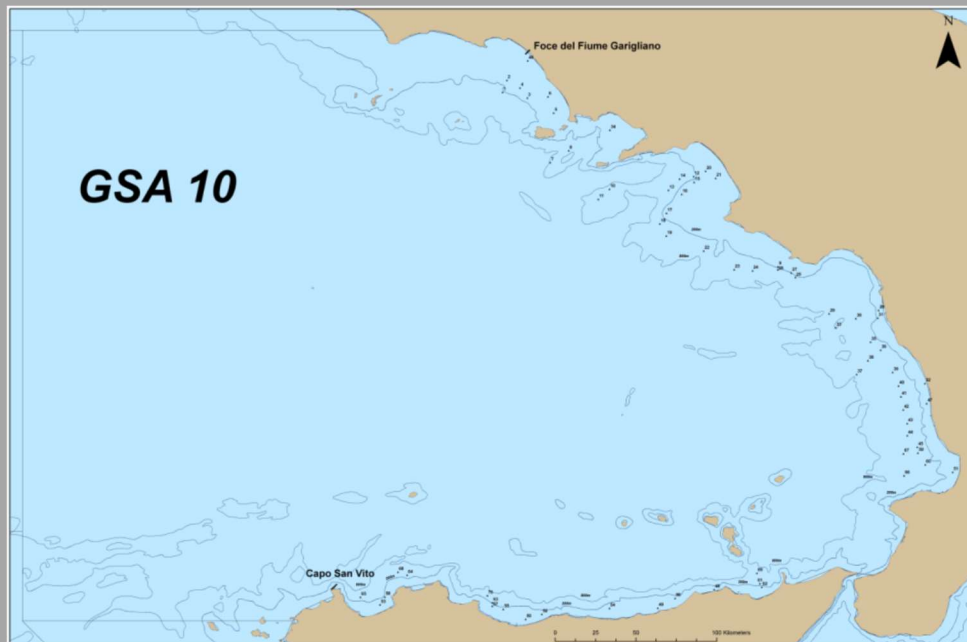
6. Graphical representation (map) showing the positions (locations) of the realized samples.

Maps presenting the spatial distribution of the fishing hauls per the 7 Italian GSA are reported below.

MEDITS SURVEYS: POSITION OF THE HAULS IN THE DIFFERENT ITALIAN GEOGRAPHICAL SUB-AREAS (GSA)



*Figure 1 - GSA 9 (Ligurian Sea/Upper Tyrrhenian Sea)*



*Figure 2 - GSA 10 (Lower Tyrrhenian Sea)*

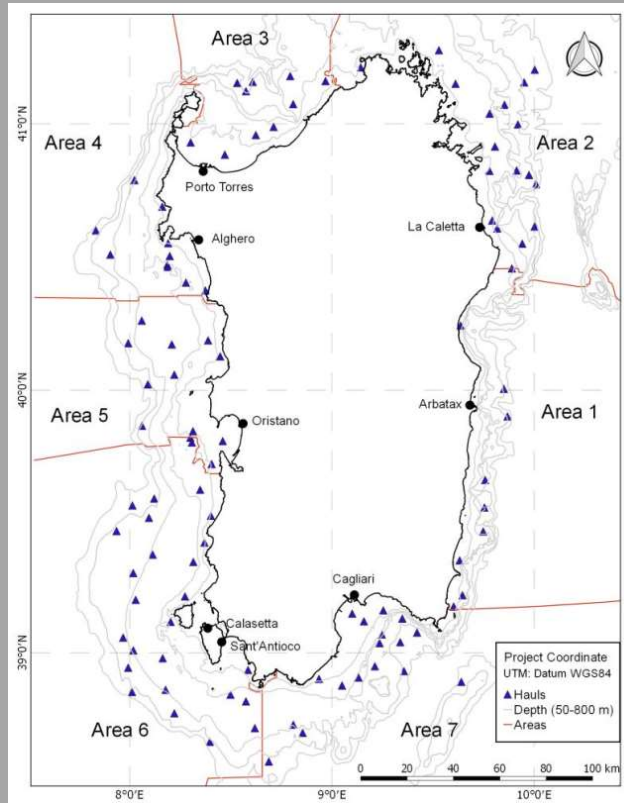


Figure 3 - GSA 11 Sardinian seas

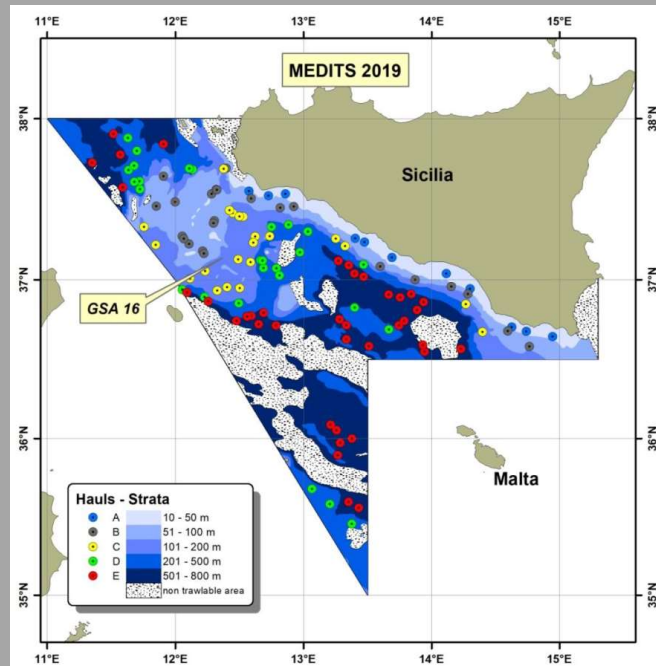
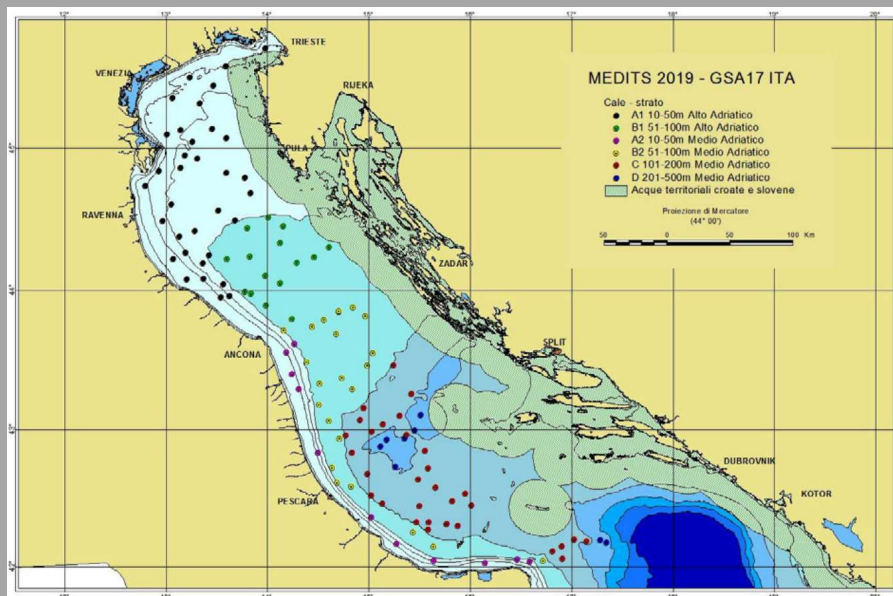
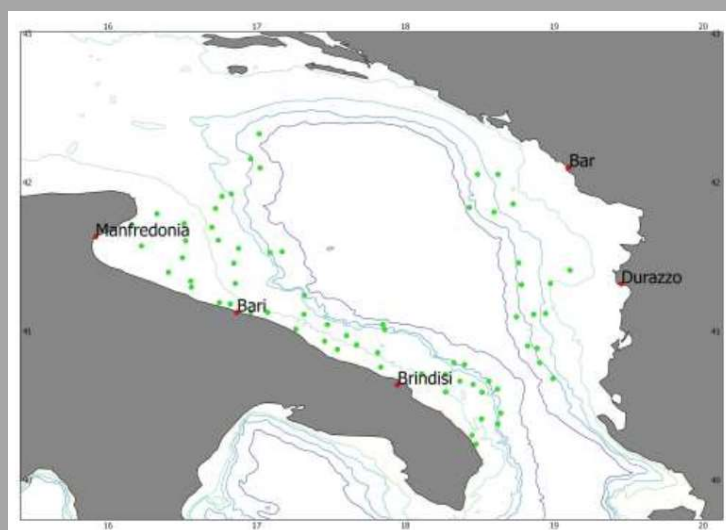


Figure 4 - GSA 16 Sicilian Channel



*Figure 5 - GSA 17 Upper and Middle Adriatic*



*Figure 6 - GSA 18 Lower Adriatic*

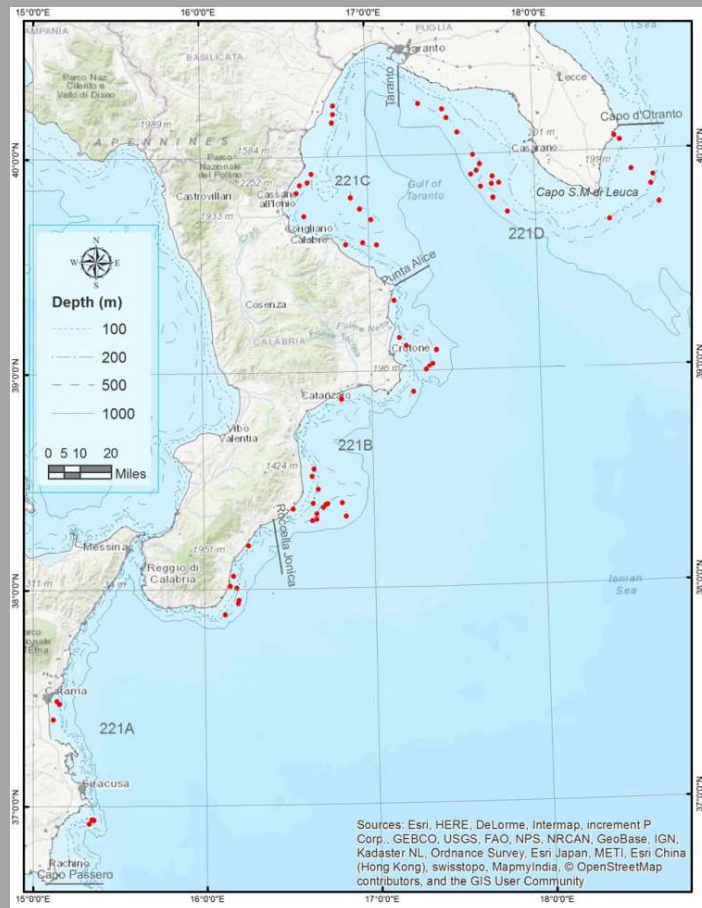


Figure 7 - GSA 19 Western Ionian Sea

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://cloudfs.hcmr.gr/index.php/s/D8fq1mTLYDdnBoI>

The Medits Steering Committee 2019 has been held in France (Sete) in April.

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

The MEDITS experimental trawling 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 estimate 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 in the context of research projects funded by the European Union such as RECFISH, STREAM, MED-UNITS, MINOUW.

In particular, the abundance indices were used in models stock assessment analytics during the STECF working group (STECF EWG 19-10) 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 during 2019.

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 2019 survey was carried out in Italian territorial waters and in the waters of the 7 GSAs, in accordance with the provisions of WP 2017-2019.

As a result of the project "Recovery of Fisheries Historical Time Series for Mediterranean and Black Sea Stock Assessment (RECFISH) ", recently funded by the European Union within the framework of the framework EASME / EMFF / 2016/032, the standardization processes of MEDITS data has been carried out. The approach is based on the use of Generalized Additive Models (GAMs) and has been applied to the data of *A. foliacea* in GSA 18 and 19 and of *M. barbatus* in GSA 18; the preliminary results were presented during the Working Group GFCM WGSAD 2019.

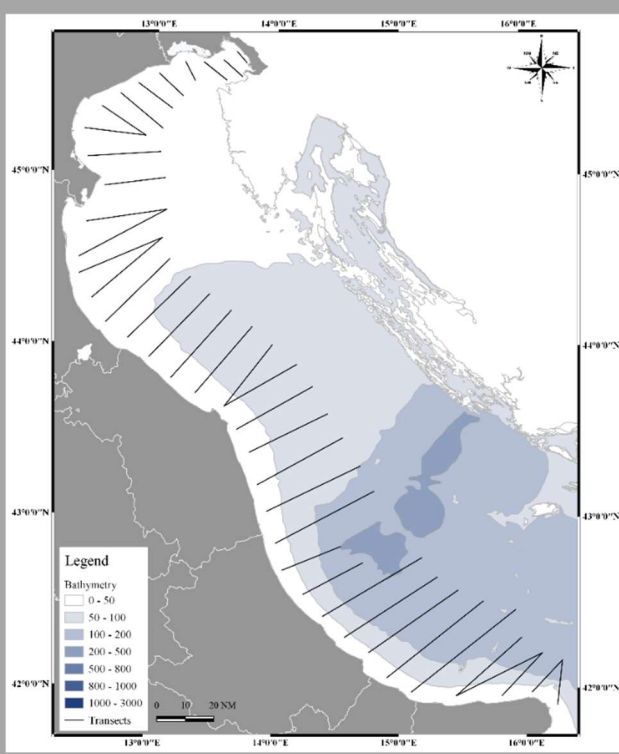
In GSA 11 SIMRAD sensors, sent to assistance after 2018 survey, did not arrive in time for the 2019 survey. For this reason, the horizontal and vertical openings have been estimated through a regression model that takes into consideration the depth of haul and the length of the cables. For the same reason, it was not possible to detect the temperature at the bottom.

### MEDIAS SURVEY (mandatory survey)

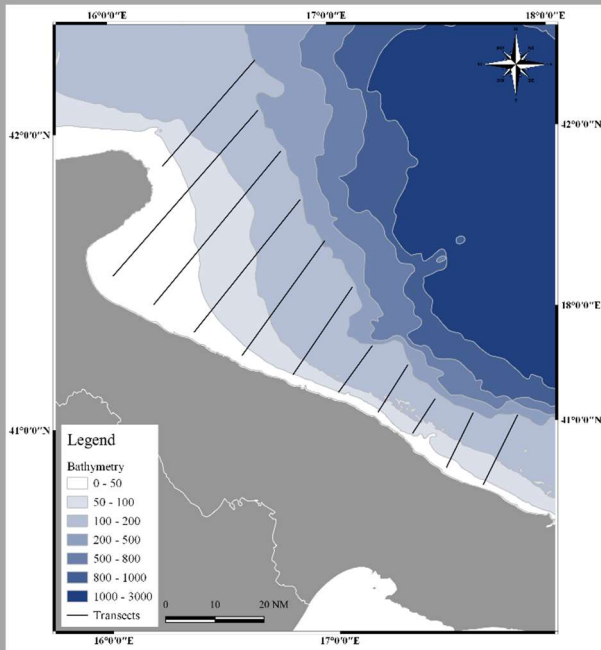
#### 6. *Graphical representation (map) showing the positions (locations) of the realized samples.*

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

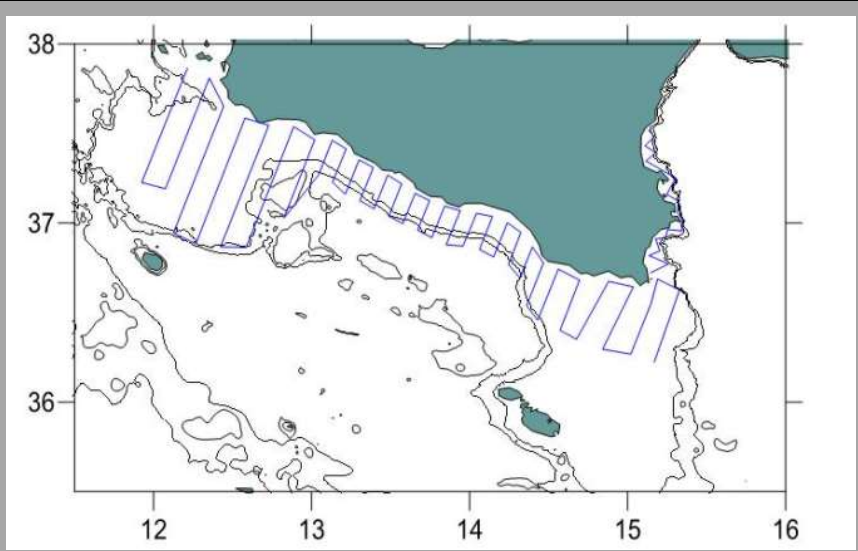




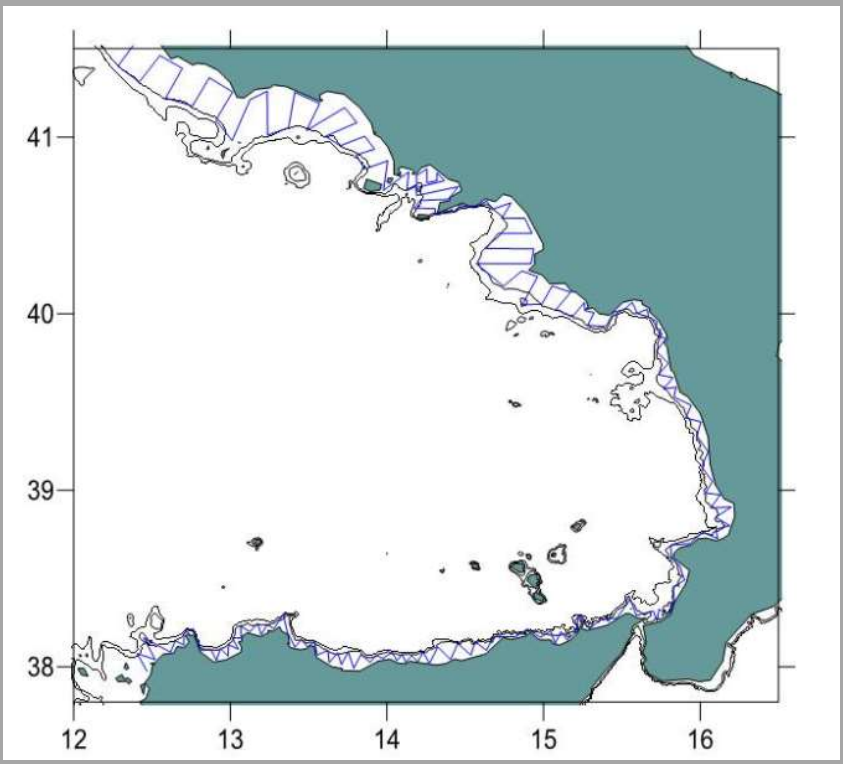
*Figure 8- MEDIAS in the GSA 17 (Upper and Middle Adriatic)*



*Figure 9 - MEDIAS in the GSA 18 (Lower Adriatic)*

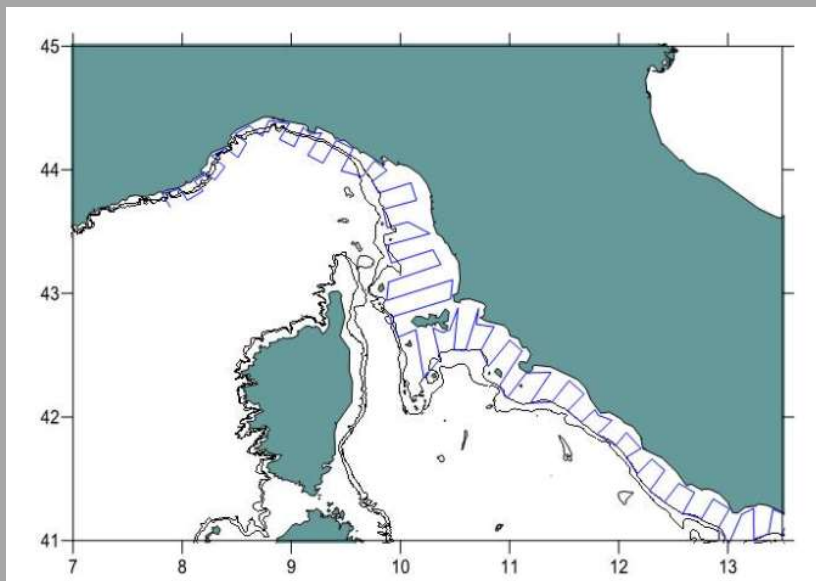


*Figure 10 MEDIAS in the GSA 16 (Sicilian Channel)*



*Figure 11 -MEDIAS in the GSA 10 (Lower Tyrrhenian Sea)*





*Figure 12 -MEDIAS in the GSA 9 (Ligurian Sea/Upper Tyrrhenian Sea)*

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. A link to the meeting report is available at the following link: <http://www.medias-project.eu/medias/website/meetingrep/Meeting-reports/Report-of-the-12th-MEDIAS-Meeting---Athens/>.

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. Demographic structure in terms of size, age and sex of the pelagic populations has been derived from pelagic trawls.

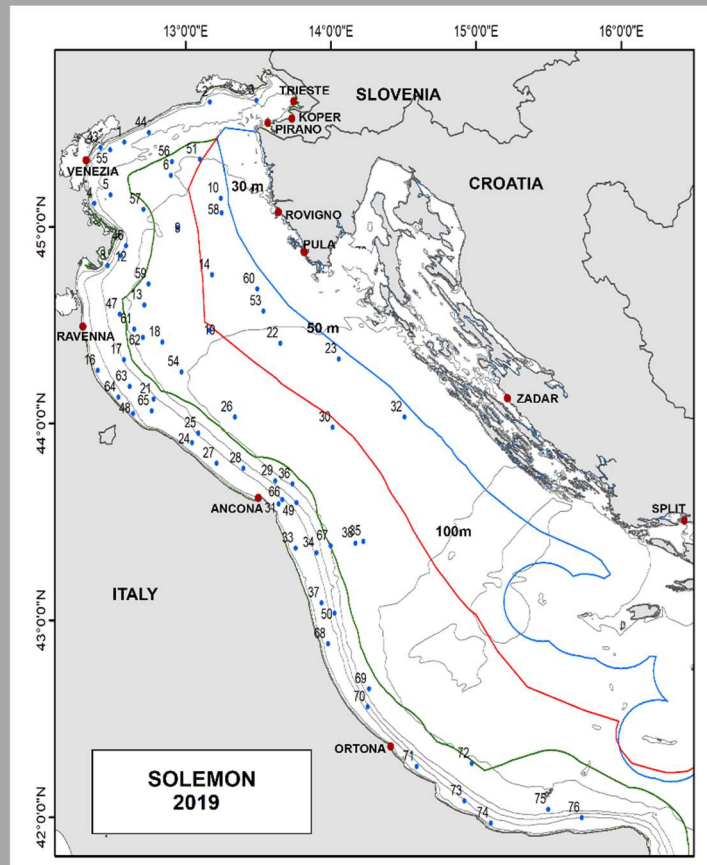
9. *Extended comments (Tables 1G and 1H)*

The survey has been implemented according to the WP and the MEDIAS protocols.

The main drawback in annual surveys concerns the possible presence of new sea structures overlapping with the sampling plan. These structures are mainly mariculture facilities at the coast, military shooting ranges and the presence of regasification plants. An increase in regasification plants is expected in the western part of the Adriatic Sea in the coming years, with the consequent possible local re-modulation of the transect plan of the acoustic survey. In any case, for now the annual variations to the sampling plan have been rather limited and have not caused appreciable variations in the sampling envisaged by the WP which can be considered totally respected.

SOLEMON SURVEY (non mandatory survey)

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



*Figure 13 – SOLEMON hauls in GSA 17*

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. The coordination meeting took place 18 – 22 March 2019, at ICES Head- quarters (<http://www.ices.dk/community/groups/Pages/WGBEAM.aspx>).

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/>).

## DRES SURVEY (non mandatory survey)

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

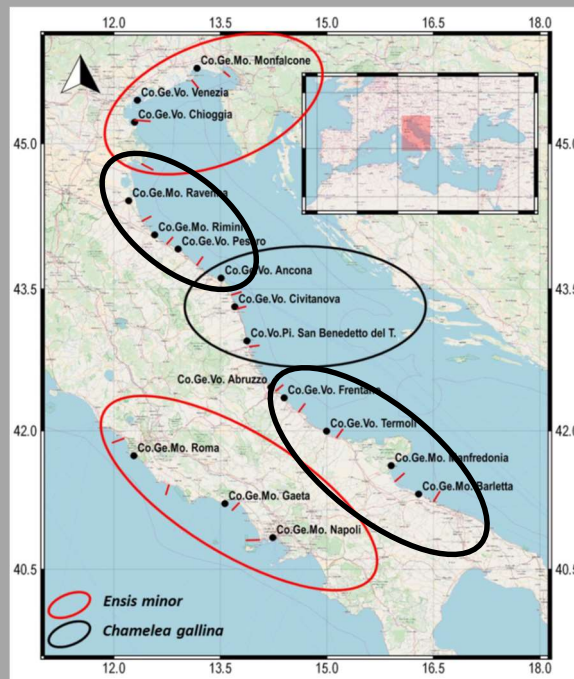


Figure 14: Marine districts (“compartimenti”) where DRES was implemented for monitoring *Ensis minor* and *Chamelea gallina*

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

This is a national survey. A survey manual has been prepared and it is available in the Italian DCF web site (<http://dcf-italy.cnr.it>).

8. 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*) 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). From the surveys have been calculated indispensable indicators for the management. These reference points 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 the *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 2019, DRES was implemented in all the planned GSAs. The main problem for the organization of the 2019 surveys was, once again, that of obtaining permits to be able to operate with commercial boats.

(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 multiannual Union programme and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of the Decision (EU) 2016/1701. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under Regulation (EU) No 1224/2009 or where data collected under Regulation (EU) No 1224/2009 are not at the right aggregation level for the intended scientific use.

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

#### *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 metier.
- 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

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*

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:

1. separate treatment of the various data sources of the control regulation - LB, VMS and of the sample survey
2. identification of 'missing data'
3. 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*

The data processing activities for 2019 were carried out according to the Work Plan.

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

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

#### *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)
- Value of quota and 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 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 and in line with the results of section 2A (fishing activity). A further segmentation of the fleet based on a geographical criterion (combinations of administrative region and FAO geographical sub-area (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 will be 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 will be: wages and salaries of crew, energy costs, repair and maintenance costs, variable costs, non-variable 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 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. These activities will be carried out through an interactive web application specifically developed for the statistical analysis of primary economic data for fisheries.

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 expanded to the population. The raising factors will be calculated through the Horvitz - Thompson estimator, while the formula of Sen-Yates-Grundy will be used to estimate the sampling errors. Detailed methodology is available on: <http://dcf-italia.cnr.it/main/docs/14>.

The value of capital and capital costs will be estimated according 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). Assumptions for application of the PIM are available on: <http://dcf-italia.cnr.it/main/docs/14>.

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. This information will be further integrated with data based on direct interviews to vessels which are not subject to the publication of balance sheets.

#### *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 a specific statistical tool.

Italian software and methodologies used for statistical control of primary data and for the estimation procedures (e.g. the R scripts) have been presented at the 5th Planning Group on Economic Issues and are available on: <http://dcf-italia.cnr.it/main/docs/14>.

#### *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 5 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. Clearly, the evolution of the fleet over the years, both in terms of numbers and composition by segments, inevitably causes deviations from these rates. In particular, deviations are recorded for the following fleet segments:

- Purse seiners 06-12 (PS VL0612), which was not foreseen in the fleet used for drafting of the Work Plan;
- Polyvalent active and passive gears (PMP VL0612 and PMP VL1218), which were present in the fleet used for the preparation of the Work Plan, but not are no more present in the fleet relating to the year 2017.

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 PS VL0612, for which no sample rate was planned, a sample rate of 9% 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. Regarding the segments PMP VL0612 and PMP VL1218, these were obviously not sampled because they were no longer present.

Finally, the segment of vessels greater than 40 meters (PSVL40XX), has been covered by a census and not by a sample survey with a coverage of 25% as reported in the original Work Plan. This segment includes vessels for tuna fishing and one vessel operating in the Indian Ocean; it has been decided to manage them through a census as already done for other vessels of the same type (e.g. DTS VL40XX).

#### *9. Deviations from Work Plan methodology used for estimation procedures*

No deviations.

#### *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: <http://dcf-italia.cnr.it/reserved/lineeguida/1>.

PGECON recommendations, as well as methodologies and definition, as provided by the PGECON sub group on Statistical and Methodological Issues (SIM), are 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: training of data collectors, statistical and consistency checks of the sample data, benchmark analysis. In addition, quality checks are 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 methodology used for the calculation of quality indicators follows the definitions reported in the manual "Quality guidelines for the DCF" (Moura, 2016). 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  $\pi$ PS (inclusion probability proportional to size).

### *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? National web site for the Data Collection Framework (<http://dcf-italia.cnr.it/>)

Provide the web link, if documentation is publicly available:

<http://dcf-italia.cnr.it/reserved/lineeguida/1>

### 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 direct interviews with ship owners and 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 2018, 8 vessels were active, of which 7 were operating in the CECAF area, using trawler nets and one purse seiner was active in the IOTC area. To estimate the economic data, the financial statements of one company to which 4 vessels belong to, were used. The financial statement data has been analyzed and reclassified based on interviews with sector operators. Data for the remaining 4 vessels were obtained by an interviewee to the administrative manager that provided the information necessary to make the estimates.

Data referring to the 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 main problem encountered in estimating data concerned the difficulty of separating the fishing activity from other activities carried out by the companies; some of these carry out activities of marketing, other fishing activities with other fishing vessels in the Mediterranean.

Knowledge of the economic and accounting structure of vessels and the knowledge of some local captains, already involved in ocean fishing, have allowed to interpret the accounting data reported in the financial statements, to analyze them and to link the information gathered from the financial statements with the economic variables required by the EUMAP.

### *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. <http://dcf-italia.cnr.it/reserved/lineeguida/1>

(max 1000 words)

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

General comment: This box fulfills paragraph 5 point (b) and paragraph 6 point (b) of Chapter III of the multiannual Union programme and Article 2 and Article 3 paragraph (3) point (c) of the Decision (EU) 2016/1701. It is intended to specify data to be collected under Table 6 of the multiannual Union programme.

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

*1. Aim of pilot study*

Social variables as indicated in Table 6 of EUMAP will be collected every three years starting from 2018.

The pilot study will cover: the fishing sector, marine and freshwater aquaculture and processing industry.

In 2017 a pilot study will be implemented to:

- precisely define the variables listed in table 6 of EUMAP
- suggest a sound methodological approach to collect the social variables
- test the methodology in selected case studies (2 case studies for the fleet, 1 case study for the aquaculture, 1 case study for the processing sector)

*2. Duration of pilot study*

The pilot study will be implemented in 2017. Main results will be presented in relevant expert working groups (PGCON).

*3. Methodology and expected outcomes of pilot study*

The methodology will be based on a mixed-method approach to collect primary information that includes semi-structured interviews to be implemented through focus groups with key local informants in the community and fishing/aquaculture/processing sector together with targeted questionnaires. Secondary data at the national and local levels will be also used to provide additional demographic data and to evaluate trends in employment profile.

In particular, the pilot study will consider the following steps:

1. review of the available literature in social surveys and investigation on the information already available in official administrations and at the national statistical institute.
2. focus groups and interviews with key local informants in the community to prepare the questionnaire and to highlight the main problems related to the collection of social data
3. selection of case studies on the basis of socio economic importance of the fisheries/aquaculture/processing sector within the Italian context and links to other economic sectors (2 case studies for the fleet, 1 case study for the aquaculture, 1 case study for the processing sector).
4. collection of data in the case studies applying a stratified sampling surveys. Sampling will be implemented through the questionnaires set up in step 1. The sample will include representatives from different segments and various employee-types within the segment. The stratification of groups prevents bias, and the selection of key informants is considered

appropriate to ensure that the people with sufficient knowledge of the subject area will be involved.

5. data processing according to statistical procedures and analysis of the results.

Expected outcomes of the study are mainly aimed at producing consistent and comparable social variables, definitions and methods of data collection to be applied in 2018

(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. The pilot study on social variables of the fleet sector has been carried out in 2017. In 2018, social data have been collected on the basis of the results of the pilot studies.

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

Social data will be collected in 2021.

*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. The pilot study on social variables of the fleet sector has been carried out in 2017. In 2018, social data have been collected on the basis of the results of the pilot studies.

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

Social data will be collected in 2021.

*Pilot study for the processing sector*

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

Based on the results obtained during the pilot study conducted in 2017, data collection on social data started in 2018 and was finalized in 2019. Final estimates have been released in November 2019, consistently with the ISTAT (national statistical offices) release times, allowing their reclassification on the basis of data collection by questionnaires.

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

Results of pilot study carried out in 2017 have been applied in subsequent years.

(max 900 words)

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

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

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

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

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*

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 multiannual Union programme and Article 2 and Article 4 paragraph (3) point (d) of the Decision (EU) 2016/1701. It is intended to specify data to be collected under Table 8 of the multiannual Union programme.

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

#### *1. Aim of pilot study*

The aim of the pilot study is to 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 will be implemented in 2017.

Environmental data will be collected every two years starting in 2018.

#### *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

Answers to the questionnaires will then be analyzed and answers will be assessed to achieve suitable results for the actual data collection to be implemented in 2018.

(max 900 words)

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

No activity in 2019 (environmental data collected in 2018 and according to EUMAP should be collected every two years).

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

No activity in 2019 (environmental data collected in 2018 and according to EUMAP should be collected every two years).

(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 multiannual Union programme, Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of Decision (EU)

2016/1701. It is intended to specify data to be collected under Table 11 of the multiannual Union programme.

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

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

In Italy the fish processing sector is part of the industry, manufacturing sector with NACE code 10.20 (fish processing activity). Structural Business Statistics (SBS) data for the 10.20 activity sector will be used for providing data on industries having more than 10 employees and exerting fish processing as main activity. SBS data as requested by Reg. CE 295/2008 are collected by ISTAT, the Italian Statistical Institute and provided to ESTAT.

For those variables not directly provided under SBS (e.g. other incomes, value of unpaid labour, other operational costs, operating subsidies, consumption of fixed capital and unpaid labour ad-hoc indirect surveys will be carried out on SBS data or on official data (collected under other national surveys) or by mean of ad-hoc surveys where data are completely unavailable (debt and total value of assets).

In line with the provisions of EUMAP, economic data for enterprises with less than 10 employees, representing in 2014, 75% of the whole sector, will be collected through the implementation of a specific survey. The main data sources will be enterprises' registers and the official balance sheets of these companies for the main income and costs data.

Subsidies on investments will be collected by using the main administrative sources (e.g. funds allocated under EMFF). Taking into account that this variable is collected starting with this new data collection program, it is still unclear if this variable could be provided by different employment segments (<10 and >10).

In order to collect all the economic data on employment for the segment <10 employee, enterprises' registers will be cross-checked with other national registers (e.g. labour registers) for providing the main economic data on employment (including the social and economic data on FTE national).

As far as the social data related to employment, data will be collect for the whole sector every three years. The main data sources (e.g. labour registers, ad hoc questionnaires and SBS data) will be cross-checked and used for providing the variable listed under Table 11 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.

The national program foresees the collection of data on raw material in weight, by species and origin, for the whole sector. Data will be collected by mean of questionnaires and interviews submitted to selected industries (according to the representativeness) 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*

The already existing data collection surveys by ISTAT are well established and provide validated time series. The surveys used to collect data under SBS and provided to ESTAT refer to a) small and medium enterprises (PMI survey) and large enterprises (SCI survey). Quality reports on both the surveys are available on request or already on the ISTAT website.

Economic data for the segment <10 will be collected by mean of an ad-hoc survey.

The collection of social data on employment will be explored by mean of a pilot study in 2017 whose aim will be to cross-check labour register's data and data collected by mean of ad-hoc questionnaires. The final data collection scheme will be based on the pilot study and will start in 2018.

For the volume of raw material by species and origin no such regular collection scheme is established, so a pilot study will be conducted in 2018.

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

Where data are already covered by national official data collection (e.g. SBS data), sampling frame and allocation scheme are defined according to the specific methodologies under those surveys (PIM and SCI) implemented by ISTAT and whose details are available in official reports and website ([www.istat.it/en/tools/methods-and-it-tools](http://www.istat.it/en/tools/methods-and-it-tools)).

For the data collection conducted by mean of ad-hoc surveys the sampling frames will be defined according to the surveys already implemented under the data collection framework since 2006.

### *4. Description of methodologies used for estimation procedures*

For economic and social variable collected through a census no estimation procedure is necessary and past experience shows no problems with non-response.

In case of economic data gained through sample standard statistic parameters will be applied to raise the values to the overall population.

For the pilot studies on social variables and on raw material volume the procedures to estimate the totals will depend on the results of the planned studies and on data availability.

### *5. Description of methodologies used on data quality*

The quality of data for those data covered by official statistics is ensured by the fact that data on fish processing industry are collected by ISTAT under European SBS standards.

For data obtained by estimation on national registers, large errors are not expected.

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.

As far as the pilot study on raw material, as answering to this questionnaire is not mandatory for the companies, a low response rate is to be taken into account. As a consequence, the data collection will be complemented and anticipated by communication strategies in advance (announcements in fish sector magazines, personally introduction of the project to the association of fish processors) as well as mail reminder. Quality will be assessed by response rate and the sampling errors will be expressed by the main quality and accuracy indicators wherever possible (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*

Data collection covered the "main" segments (companies for which fish processing is the main activity) identified in the Work Plan. Data have been collected through a sample survey. The sample survey has been defined with a non-random selection of the sample unit, as the selection of the sample companies is based on the availability of the financial statements. The sampling plan is reported in table 3C.

- For "main" companies with a number of employees > 10, the WP planned to use the Structural Statistics (SBS) of ESTAT source, as a testing phase. However, the check on data sources during the first months of the new programming period and the release of 2016 data has highlighted some critical issues, most of them already reported in last year Annual Report. The main issues are: The timing for Eurostat in publishing data are not in line with the national deadlines and the usual deadline of DG-MARE data calls (October N+2). Indeed, final data are published by Eurostat about two years after the end of the reference year (between November-December N+2). Some time is needed to check and elaborate data to reply to the EUMAP requests.
- The report of STECF 17-16 highlights that also for MS using SBS since some years, DCF and ESTAT data do not completely match. For some of them this is due to the reference population, that covers, in the case of SBS, only a portion of the entire sector.
- According to the check carried out by STECF 17-16, it emerges that most MSs continue to use ad-hoc survey as it appears that ESTAT data are not always representative of the fish processing sector as required by EUMAP: SBS surveys are not built on the main specificity of the sector as SBS data are collect for all the industries.
- Furthermore, the use of the new methodology planned in the WP (using SBS) has not allowed the release of data at the geographical breakdown level based on NUTS2, administrative region, to the national administration, as planned by the Italian technical plan. The SBS data are not available, in fact, at this level of geographical disaggregation. This criticality represents a significant loss of information, compared to the previous program.

For all the above reasons, it has been considered more appropriate, to re-apply the the ad-hoc sample survey for the entire universe starting from 2019 (with 2017 data)

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

See previous point.

#### *Deviations from Work Plan methodology used for estimation procedures*

See previous point.

### *10. Quality assurance*

#### *10.1 Sound methodology*

The sampling methodology is, indeed, 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: <http://dcf-italia.cnr.it/reserved/lineeguida/1>

#### *10.2. Accuracy and reliability*

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

In 2019, accuracy indicators for the 2017 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, <http://dcf-italia.cnr.it/main>

Provide the web link, if documentation is publicly available:

<http://dcf-italia.cnr.it/reserved/lineeguida/1>.

(max 1000 words)

**Text Box 4A: Sampling plan description for biological data**

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

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

REGION: Mediterranean Sea and Black Sea

In order to ensure congruency along the data series, Italy will report 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.

*Tables 1A, 1B and 1C*

RCMMed&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 (GFCM-DCRF, 2016).

Table 1A - Each line in Table 1A cannot correspond to one stock because in the current column namely 'Area/Stock' it is present the FAO division (but in the Med&BS, stock assessment and fisheries management are carried out by Geographical Sub-Areas GSA of the GFCM). So, as agreed at RCMed&BS-LP 2016, in the 'Comments' column it has been inserted the Relevant GSA/s in which the species occurred and for which biological sampling will be carried out. The identified GSA it has been correctly reported in Table 1B and 1C.

Average landing data and share in EU landing have been obtained from the RCMed&BS-LP 2016 report. Should be underlined that for some species (i.e. *Lophius* spp., *Mullus* spp., *Trachurus* spp. *Eledone* spp. and *Mugilidae*), due to inaccurate species identification, the share (%) in EU landings might be not precise.

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 (and for *Anguilla Anguilla*), sex, age, maturity and weight, should be reported every three years (as requested by GFCM-DCRF Appendix A.2).

Furthermore, if a species it is presents in Groups 1, 2 and 3 of the GFCM-DCRF (Appendixes A) and it is absent from the tables of the EUMAP this species should be included in the sampling plan.

Table 1C - RCMMed&BS-LP 2016 agreed that, for 2017, the number of demersal and small pelagic individuals to be sampled should be decided by the MS based on previous sampling knowledge. For the future, the optimum number of individuals required for biological data sampling will be calculated using the tool devised by the project Strengthening regional cooperation in the area of fisheries data collection in the Med&BS (MARE/2014/19- SI2.705484).

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 RCM-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 C and D of the EU Dec. 1251/2016, and in the Appendix A.3 of the GFCM-DCRF, 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. All species (in tables C and D of EUMAP will be collected concurrently only for length without any ad hoc planning sampling.

In the Italian WP, only for the four most abundant species (i.e. *R. clavata*, *R. asterias*, *R. miraletus* as commercial species and *G. melastomus* as bycatch species) there will be a sampling programme associated.

For all other sharks’ species, biological information, such as sex, age, weight and maturity, will be collected and reported when available, through the research surveys at sea.

Concerning eel, each year 60 individuals (30 for each stage, yellow and silver) from the most productive site in each EMU will be collected. In order to minimize sacrifice of individuals photographs will be collected and measures will be obtained by the software opensource TPSdig (Rolf, 1990 <http://life.bio.sunysb.edu/ee/rohlf/software.html>). Every third year, 60 individuals (30 for each stage, yellow and silver) from the most productive site in each EMU will be collected and sacrificed in order to proceed to collection of variables such as sex and age.

#### *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 (2016), 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 (primary unit) will be the fishing trip (secondary unit). 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.

With regard discards sampling, Italy will follow the discard sampling program as recommended by RCMMed&BS-LP 2016 (see updated table in the RCM MED&BS-LP report).



Concerning hydraulic and boat dredges for molluscs (Veneridae), Management Plans are implemented in Italy. Based on these plan, the collection of biological variables (i.e. length, sex, maturity, weight and age) will be implemented for each Management Consortium for the main target species in this fishery: *Chamelea gallina* (main target species), *Callista chione* and *Ensis minor*.

Finally, concerning the establishment of a recovery plan on Mediterranean swordfish, the workplane already includes the collection of adequate scientific information for highly migratory pelagic species in the Mediterranean. 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/main/docs/14>.

#### REGION: Other regions

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.

Till now there has been no requirement for Italy to sample these two fisheries, as they were sufficiently covered by the Spanish sampling program (report RCM LDF, Constanta, 2013: “Based on this information and providing that these proportions of landings and effort for the above metiers do not significantly change over the next years, there is no requirement for Italy to sample these fisheries”).

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 Decision (EU) 2016/1701:*

#### *Deviations from the Work Plan*

The 2019 activities were specified in agreement with the planned activities foreseen by the national program, following also the agreement reached at Regional level by the RCMMed&BS (currently RCG). Samplings 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.

Overall, all the identified métier has been sampled adequately in all the GSAs. Only in GSA10, due to the COVID-19 pandemic, data provided are partial (as for Table 1C data), due to closing of the laboratories.

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 bad meteo-marine conditions.

### *Action to avoid deviations*

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

#### 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 what reported in in the "Guidelines for data collection biological on the state of fishing resources "(SIBM, 2010). 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 and data analysis has be implemented in 2019 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.

##### *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). 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). During the sampling, the "concurrent at sea" strategy was privileged, when possible, as it allows to more accurately collect information on fishing operations. It must be considered, however, 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.

#### *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 for species and commercial categories, was recorded, and the weight of the discard by species (when foreseen) was recorded. 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, gender, maturity) are given in the Excel table "1C: Sampling intensity for biological variables".

#### *Data capture*

Data collection took place according to the provisions of the Work Plan. In the future, as far as possible, the actions will be aimed at ensuring time coverage (quarters) as consistent as possible with the sampling strategy. Moreover, as far as possible, 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 eventually 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 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).

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 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 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 on-board 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 2019, 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 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 2019.

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

**Text Box 5B: Quality assurance framework for socioeconomic data**

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

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

*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).

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  $\pi$ 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: <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://dcf-italia.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 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 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://dcf-italia.cnr.it/reserved/lineeguida/1>

*Socio-economic data for the processing 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 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://dcf-italia.cnr.it/reserved/lineeguida/1>

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

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