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) 2018/5270

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

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

2017-2019

Version 1 – 2019

Paris, 30 may 2020

CONTENT

SECTION 1: BIOLOGICAL DATA

TEXT BOX 1C: SAMPLING INTENSITY FOR BIOLOGICAL VARIABLES

General comments

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.

Data collection is reported for reference year 2019 only. Data collection reported for 2018 is not included as it was provided in the previous French annual report communicated in 2019.

Some lines have been identified as duplicated and are therefore “removed”, these lines are identified as red crossed text.

Some lines have been added to reflect additional opportunistic collection. These lines are described in the corresponding region box (e.g. Indian ocean) and identified in the table with grey background text.

Deviations from the work plan can generally be justified as follow :

- for data collected from commercial sources, the sampling plan is designed to reflect the fishing activity of commercial fleets and not directly linked to observation targets expressed as numbers of sampled individuals.Therefore the number of observed individuals is directly dependent on the commercial fishing patterns (commercial catches per species). Observed deviations may then illustrate the general tendencies of the concerned fleet (e.g. drop of catches of small pelagics in the GSA 7 area).

- for data collected from surveys, the number of observed individuals is dependent on the survey protocol (number of hauls) and the natural abundance/spatio-temporal accessibility of the species.

Data collected by the scheme Elasmobranches on shore not included into the annual report :

- **North Sea and Eastern Arctic :** 94 data collected on two species not selected for sampling (as specified in table 1A). 900 data collected on eight species, of which four species are selected for sampling, corresponding to mislabeled individuals are not included in the French database yet.
- **North Atlantic :** 2275 data collected on 14 species not selected for sampling (as specified in table 1A). 5229 data collected on 26 species, of which nine species are selected for sampling, corresponding to mislabeled individuals are not included in the French database yet.

TEXT BOX 1C: SAMPLING INTENSITY FOR BIOLOGICAL VARIABLES

Region: North Sea and Eastern Arctic

1. **Evidence of data quality assurance**

See textbox 5A

2. **Deviations from the Work Plan**

Besides the deviations explained in the general comments, the 2019 Sampling objectives for stock-based variables (ageing, maturity, sex-ratio and Individual weight) was achieved for *Mullus surmuletus, Merlangius merlangu*s and *Pleuronectes platessa* (see table 1C). The realisation not in line with the plan are detailed as follows:

- *Gadus morhua* (achievement = 62%), sampling number from surveys was lower than the planned number but all fish caught were sampled.
- *Pecten maximus* age (achievement = 877%) : Age is collected visually on the shell when sampling for length.
- *Polliachius virens* from ICES areas I & II (achievement = 0%). No fish was sampled because there is no landings in french fishing ports. However, the number of individuals and samples collected from ICES area VI (same stock) was over sampled to compensate for the missing area I,II.
- *Solea solea* from surveys (achievement = 647%). Oversampling is mainly due to the integration of samples from a specific french research project focused on this species in the Eastern Channel. Additional sampling was not at DCF expense.
- *Solea solea* from commercial (achievement = 75%) suffered the strong decrease of cathes of sole by gillnetters in the Northern France, especially in the second part of the year.

3. **Actions to avoid deviations**

The specific research project which led to an oversampling of *Solea solea* will end during this year and sampling will be reduced to the planned minimum number of individuals.

Polliachius virens from ICES areas I & II,. an initiative is ongoing for self-sampling for cod. There is a need to get this on and going before addressing the issues of saithe with the same crew and same vessel. In the meantime an agreement with other MS could be reached within the RCG.

Polliachius virens from ICES area IV are completed by the fish from ICES area VI which are in the same stock. The number of samples are the same.

TEXT BOX 1C: SAMPLING INTENSITY FOR BIOLOGICAL VARIABLES

Region: North Atlantic

1. Evidence of data quality assurance

See textbox 5A

2. Deviations from the Work Plan

Besides the deviations explained in the general comments, the 2019 Sampling objectives for stock-based variables (ageing, maturity, sex-ratio and Individual weight) was achieved for *Engraulis encrasicolus, Merlangius merlangus, Merluccius merluccius, Molva dypterygia* and *Sardina pilchardus* (see "AR comments" from table 1C). The 2019 Sampling objectives for all stock-based variables was also achieved for *Dicentrarchus labrax, Gadus morhua and Melanogrammus aeglefinus* since the low number achieved during the survey (<90%) was covered by commercial sampling.

Homarus gammarus and *Nephrops norvegicus* (sexual maturity) : there is no plan to collect this information from commercial catches. This is an overlook of the NWP.

For six species (*Aspitrigla cuculus, Lepidorhombus whiffiagonis, Lophius budegassa, Lophius piscatorius, Polliachius virens* and *Solea solea*), the sampling number was higher than the planned number. For all species except *Polliachius virens,* fish were sampled during the main surveys EVHOE and ORHAGO. For *Polliachius virens,* commercial samples from ICES area VI were higher than the planned number (151%) to make up for the lack of data from the North Sea (ICES area IV) as it is the same stock.

3. Actions to avoid deviations

For *Polliachius virens,* next years, in order to maintain a constant sampling effort in the ICES areas IV & VI, samples in ICES area VI will be increased to limit the effect of the cessation of sampling in ICES area IV.

Text Box 1C: Sampling intensity for biological variables

Region: Mediterranean Sea and Black Sea

1. **Evidence of data quality assurance**

See textbox 5A

2. **Deviations from the Work Plan**

Besides the deviations explained in the general comments, the 2019 Sampling objectives for stock-based variables (ageing, maturity, sex-ratio and Individual weight) was achieved for *Engraulis encrasicolus, Lophius piscatorius* and *Mullus barbatus* (see "AR comments" from table 1C). The 2019 Sampling objectives for all stock-based variables was also carried out for *Merluccius merluccius, Sardina pilchardus and Sparus aurata* with a low sampling rate from surveys or a low commercial sampling rate but achieved when both sampling sources are combined. For *Sparus aurata*, there is a known spatial and temporal mismatch in catchability in spring with the survey sampled area.

For *Lophius budegassa,* the sampling number from MEDITS survey was higher than the planned number (295%). For *Mullus barbatus,* the sampling number from MEDITS survey was smaller than the planned number (50%). see also general comments on deviations from survey sources.

3. **Actions to avoid deviations**

For *Mullus barbatus,* the sampling number from MEDITS survey could be completed by the commercial sampling. The planned number per year for this species is 75 individuals.

TEXT BOX 1C: SAMPLING INTENSITY FOR BIOLOGICAL VARIABLES

Region: Other region – Indian Ocean (IOTC)

1. **Evidence of data quality assurance**

See textbox 5A

The sampling protocol for length of target species for the purse seine fishery is implemented in order to optimize the accuracy of estimates of tuna catches per species for the two fishing mode: the free school and the fishing aggregation device (FAD).

Currently, the T3 process for specific catches estimates does not provide statistical indicators aiming to quantify the accuracy of those estimates. The development of a new stratification model was done in 2019 and have been presented during the dedicated ICCAT and IOTC working groups. This method is in development in a new software "T3 version 3" and will be presented during the next RFMO meeting in 2020.

For the longline fishery, observers are collecting length data for the target species (swordfish and tunas) in order to increase the coverage of their respective length frequency distributions.

2. **Deviations from the Work Plan**

The deviation from the Work Plan is related to the absence of biological data collection for some species due to their absence in landings or in discards followed by observers.

Moreover, some species are added to the biological data collection in "Indian Ocean Western and Eastern" area due to their presence in landings.

Species	Variables	Data sources	Sampling protocol
Acanthocybium solandri	Sex ratio, Sexual maturity, Weight	Commercial	Large pelagic biological data in foreign tuna canneries
Auxis thazard	Sex ratio, Sexual maturity, Weight	Commercial	Large pelagic biological data in foreign tuna canneries
Carcharhinus longimanus	Length	Commercial	Large pelagics at sea
Elagatis bipinnulata	Length	Commercial	Large pelagic biological data in foreign tuna canneries
Carcharhinus falciformis	Sex ratio, Sexual maturity, Weight	Commercial	Large pelagic biological data in foreign tuna canneries
Coryphaena hippurus	Sexual maturity	Commercial	Large pelagic biological data in foreign tuna canneries
Elagatis bipinnulata	Sex ratio, Sexual maturity, Weight	Commercial	Large pelagic biological data in foreign tuna canneries

3. **Actions to avoid deviations**

None

TEXT BOX 1C: SAMPLING INTENSITY FOR BIOLOGICAL VARIABLES

Region: Other region – Western Central Atlantic (ICCAT and WECAFC)

1. **Evidence of data quality assurance**

A length sampling programme is now up and running in all three French locations of the Western Central Atlantic (French Guyana, Martinique and Guadeloupe). The objective is to fully comply with the needs of ICCAT and WECAFC (DCRF in preparation) and also to be entirely coherent with the On-shore programme running in the mainland and in the Indian Ocean. For further information, see textbox 5A

2. **Deviations from the Work Plan**

Severe difficulties were encountered in the field, explaining the low numbers of individuals measured for some species, with accessibility to landings points issues, low landings per trips, tropical weather conditions limiting the manipulation of the fish, low awareness of professionals on the sampling programme. For example, in Martinique and Guadeloupe, all lutjanidaes are to be sampled but only *Lutjanus vivanus* was encountered and in a small proportion.

3. **Actions to avoid deviations**

In 2019 (as previously), the prioritisation was given to ICCAT requirements and sampling of large pelagics. The WECAFC DCRF in preparation will be critical for balancing the priorities. At the beginning of 2019, adjustments were made to the sampling plans to increase the number of samples in order to get more measurements. In 2019, an Ifremer delegation has travelled to Guyana, Martinique and Guadeloupe to meet with people in the field and stakeholders to work on sampling protocols and improve awareness of the programme.

TEXT BOX 1C: SAMPLING INTENSITY FOR BIOLOGICAL VARIABLES

Region: Other region – South Eastern Atlantic (ICCAT)

1. Evidence of data quality assurance

See textbox 5A

The sampling protocol for length of target species for the purse seine fishery is implemented in order to optimize the accuracy of estimates of tuna catches per species for the two fishing mode: the free school and the fishing aggregation device (FAD).

Currently, the T3 process for specific catches estimates does not provide statistical indicators aiming to quantify the accuracy of those estimates. The development of a new stratification model was done in 2019 and have been presented during the dedicated ICCAT and IOTC working groups. This method is in development in a new software “T3 version 3” and will be presented during the next RFMO meeting in 2020.

For the longline fishery, observers are collecting length data for the target species (swordfish and tunas) in order to increase the coverage of their respective length frequency distributions.

2. Deviations from the Work Plan

The deviation from the Work Plan is related to the absence of biological data collection for the main neritic tuna species (Auxis rochei, Auxis thazard, Sarda sarda) commercialized on the so-called “faux poisson” market in Abidjan. The sampler team could not collect individuals due to an absence of agreement with the fishing companies.

3. Actions to avoid deviations

A signature of an agreement between IRD and the fishing companies is ongoing. If necessary a budget will be dedicated to buy fish in order to comply with the established Work Plan.

SECTION 1: BIOLOGICAL DATA

TEXT BOX 1D - RECREATIONAL FISHERIES

General comments

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.
In France, four different sampling schemes provide data about recreational fisheries. In marine waters, bluefin tuna catches are monitored via mandatory reports of catches. All other catches are monitored by phone surveys and fishermen panels (cf. pilot study 1). In freshwaters, salmon catches by all recreational fishermen and eel catches by recreational fishermen with nets and gears are monitored via mandatory reports on catches.

TEXT BOX 1D - RECREATIONAL FISHERIES

Mandatory reports on catch of bluefin tuna

1. Description of the target population

The target population is the population of recreational fishermen with a legal right to catch and retain bluefin tunas.

2. Type of survey

Recreational fishermen have to apply for an authorization in order to be permitted to catch bluefin tuna (https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000038277326). They have to declare all retained catches.

The number and total weight of declared bluefin tuna landings are available for scientific use.

3. Data Quality

Collected data is based on fishermen's reports, which are mandatory. Undeclared catches of bluefin tuna is illegal and not included.

4. Data Analysis and processing

No correction methods are put in place. All declared catches are summed.

TEXT BOX 1D - RECREATIONAL FISHERIES

Mandatory reports of catch of salmon in freshwaters

1. Description of the target population

Salmon catch reporting is mandatory.

Salmon fishing takes place in 4 regions:

- Upper Normandy
- Lower Normandy
- Brittany
- Adour

When declaring their catches, recreational and professional fishermen provide information on the length, weight, date and place for the individuals they have caught, accompanied by a scale sample.

Interpretation of the scale samples thus provided along with the declarations makes it possible to improve our knowledge of salmon populations by determining the age and life characteristics of each individual.

2. Type of survey

The number and total catch with length and weight of declared *salmo salar.*

3. Data Quality

See Textbox 5A

4. Data Analysis and processing

See Textbox 5A

TEXT BOX 1D - RECREATIONAL FISHERIES

Mandatory reports on catch of eel by recreative fishermen using gears and nets

1. Description of the target population

The target population is the population of recreational fishermen fishing with gears and nets in freshwater with a legal right to catch and retain yellow eel.

2. Type of survey

Recreational fishermen have to apply for an authorization in order to be permitted to catch eel (https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000022845569). Eel catch reporting is mandatory.

The number or total weigh of declared *Anguilla anguilla*.

3. Data Quality

Collected data is based on fishermen's reports, which are mandatory. Data are stored in a Oracle database and are thus subject to an integrity check by the database management system. See textbox 5A

4. Data Analysis and processing

No correction methods are put in place. All declared catches are summed.

Text Box 1D - Recreational fisheries

Phone surveys, fishermen panels

1. Description of the target population

FranceAgriMer was commissioned in 2017 to collect data on French recreational fishing for the first time.

A pilot study has been launched in this direction with the company BVA. It started in autumn 2017 and is in two phases:

Phase 1: phase of framing to know the population of recreational metropolitan fishermen. This phoning survey took place in November and December 2017 with a representative sample of 14,320 households.

This sample was constructed on the basis of cross-quotas between the size of the household and the age of the reference person, refered to data structure given by INSEE.

Regional stratification has been carried out to better take into account the specificities of the coastline.

Following this phase, a rate of 6% of recreational fishermen over 15 years old in French households has been established.

Phase 2: Recreational fishermen were recruited to describe their monthly catches in 2019 based on logbook.

By the end of one year, an extrapolation of catches will be made from the scoping data and the quantities caught will be evaluated by species and fishing area.

As a result, the 1D table has been completed for 2018 but can not be completed for 2019 (so far) due to Covid-19 epidemic, as some logbook had been returned just a few days before confinment in France.

In 2019, between 72 and 119 recreational fishermen accepted to report their catches each trimester, describing frequency, number of catches and geographical area.

2. Type of survey

It is a survey based on a sampling of fishermen among French households.

After the pilot study is established, the survey consists in collecting catches from fishermen's logbooks.

Fishermen send their logbook every quarter by paper or online. Follow-up calls are made to recall them instructions on how to fill in logbooks. As a result, 12 months of catches are reported for 2019.

3. Data Quality

An IFREMER expert validated the methodology used in the survey.

Adjustment and grossing-up factors are applied allowing every data given by fisherman to strenghten sampling, considering pre-defined stratum they belong and number of fishermen in every stratum analysed in the pilot study. This estimation is done every quarter and adjusted to the number of respondants to make sure the sampling is representative.

4. Data Analysis and processing

It is based on collecting logbooks from fishermen monthly and reporting their catches all along the year. Fishering activity can be exposed by month with the number of seagoing trips which totalls more than 16 million. Shore fishing accounts for one quarter of the total seagoing trips. Seagoing trips can also be divided by department in metropolitan France and by french coastline. Finally, seagoing trips can be analysed by the different fishing gear used by fishermen and whether they have catches or not. Catches occur for 4 fifths of seagoing trips.

Thanks to adjustment and grossing-up factors, quantities (in tons and in number of catches) by species and by french coastline have been reported.

SECTION 1: BIOLOGICAL DATA

PILOT STUDY 1: RELATIVE SHARE OF CATCHES OF RECREATIONAL FISHERIES COMPARED TO COMMERCIAL FISHERIES

1. Aim of pilot study

FranceAgriMer was commissioned in 2017 to collect data on French recreational fishing for the first time. Following a call for tender by FranceAgrimer, the study has been carried out since autumn 2017 by the company BVA.

Its objectives are:

- To estimate the size of the population of French recreational fishermen
- To estimate catches for specific species, as specified in table 1D, in 2018 and 2019

2. Duration of pilot study

The pilot study started in autumn 2017 and will last until December 31st, 2019.

3. Methodology and expected outcomes of pilot study

The study consists of two steps.

[step 1]

The first step took place in November and December 2017, its objective was to estimate the size of the population of French recreational fishermen. The target population consisted of all households living in mainland France (around 28 million households). The sampling frame was a representative sample of 14,320 households, constructed on the basis of cross-references between the size of the households and the age of the reference persons, referred to data structure given by INSEE.

Regional stratification was carried out to better take into account the specificities of the coastline.

This phase of framing made it possible to estimate that 6% of the people over 15 years old in French households were recreational fishermen in 2017.

Non response and refusal were recorded in the survey.

[step 2]

A group of recreational fishermen contacted during step 1 agreed to describe their monthly catches in 2018 based on logbook.

Step 2 consists in collecting catches from those fishermen's logbooks monthly.

(max 900 words)

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

The first phase made it possible to establish a rate of 6% of recreational fishermen among the population over 15 years old in French households.

In 2019, , between 72 and 119 recreational fishermen accepted to report their catches, describing frequency, number of catches and geographical area.

Number of reported catches within the fishermen panel

Species	Number of reported retained catches	Number of reported released catches	Number of reported catches
Eel			
Sea bass			
Atlantic bonito			
Albacore tuna			
Bluefin tuna			
Other ICCAT species			
Pollack			
Thornback ray			
Other rays			

Sharks			
Salmon			
Cod			

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

Results from pilot study were disappointing, with too few panelists to be able to derive reasonable catch estimate. Actions have been identified to try and encourage more people to participate in the panel :

1. Contacting people via social networks
2. Putting up posters encouraging people to participate in the panel
3. Changing the log book so that it is easier to fill in
4. Teaching the contractor about marine biology so that they can interact more easily with the panelists
5. Contacting more people during the first phase of the study to come. This means planning to spend more money on it.
6. Asking for guarantees about the number of panelists in the call for tender.

Actions 1 to 3 are being taken in 2020. In the meantime, a new call for tender is being written, so that a new hone study can take place in 2020 with a new panel starting in 2021. Actions 4 to 6 should be included in the new call for tender.

TEXT BOX 1E: EEL AND SALMON DATA COLLECTION IN FRESH WATER

Fishery independent data collection

EEL

In accordance with regulation R (EC) No 1100/2007 of 18 September 2007 and in accordance with eel management plan in France index rivers were selected for each eel management unit: FR_Meus / F_Rhin, FR_Arto, FR_Sein, FR_Bret, FR_Loir, FR_Garo, FR_Adou, FR_Rhon, FR_Cors. All these data collections (index River and specific networks) monitor all stages of the eel biologic cycle and the evolution of stocks in place. The choice of index sites makes it possible to investigate different types of environment described by the Grisam:

1. Marshes Atlantic;

2. Mediterranean Lagoons;

3. River Basins <1000 km²;

4. River Basin> 1000 km² plain;

5. River Basin> 1000 km² mountain;

6. Bays closed or Atlantic estuary

Migration control stations implement traps, videocounting: Rhine, Somme Bresle Fremur, Vilaine, Sevre Niortaise, Dronne, Soustons, Rhone. Specific eel networks consist of stations followed by electrofishing for calculations of abundance index.

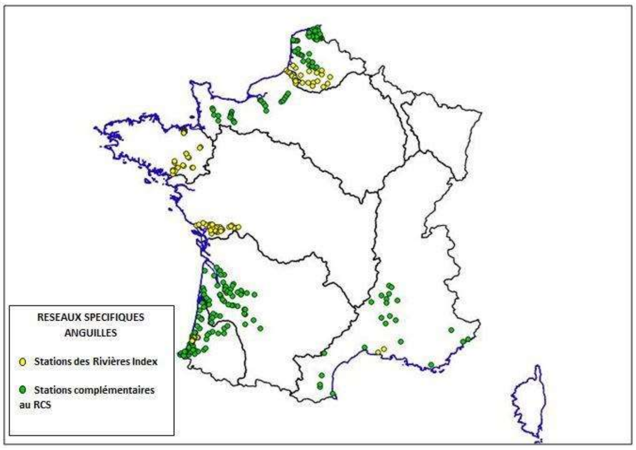


Figure left: location of monitored sites of recruitment and downstream migration; Figure right: location of électrofishing stations - yellow eels

Salmon

For salmon, there are four index rivers used by salmon group ICES (WGNAS) for the length of the series. Migration monitoring stations are implementing traps. Bresle on track parr do not begin until autumn 2016 and no monitoring of smolts are on the Nivelle. Electrical fisheries are conducted in addition to the migration controls to calculate an abundance index for salmon.

Fishery dependent data collection

EEL

In the public river domain, recreational and professional fishermen fishing with gears and nets are monitored under the SNPE (Suivi National de la Pêche aux Engins / National monitoring of fishing with gears by monthly declaration of catches). In this case, monthly reporting is mandatory.

In additional biological measurements (length, weight, age and sex when possible) will be performed on fish purchased from commercial fishermen on management units affected by commercial fishing (glass eel, yellow eel and silver eel).

SALMON

Salmon catch reporting is mandatory.

Salmon fishing takes place in 4 regions:

- Upper Normandy
- Lower Normandy
- Brittany
- Adour

When declaring their catches, recreational and professional fishermen provide information on the length, weight, date and place for the individuals they have caught, accompanied by a scale sample.

Interpretation of the scale samples thus provided along with the declarations makes it possible to improve our knowledge of salmon populations by determining the age and life characteristics of each individual.

2. Were the planned number achieved? Yes/ No

If answer is No, Member State shall explain why not, and what measures were taken to avoid non-conformity.

Eel

The freshwater eel declarations are not in the current work plan, so they are not in this year's annual report. However, we wanted to indicate that 100% of the declarations in all the EMUs concerned were indeed registered and available in 2019. As suggested by the STECF last year, all the lines for freshwater eel declaration were not added in the actual report but they have been added to Table 1E in the new NWP 2020.

Routine monitoring of electrofishing and index rivers was included in the national work plan in 2017 for the first time. Such data collection for eel is collected by 12 different data providers. Setting up a coordination process for the collection of information from those providers took time and this coordination was not in place in 2017. As a result, errors in the 2017-2019 working plan were detected.

1. In the Dronne River, the sampling design for monitoring yellow eels was never 90 nights. It is carried out on a routine basis each year for 4 to 6 nights per year. Then it’s impossible to achieve a monitoring of 90 nights, this was modified in the 2020 national work plan.

2. In the Sèvre Niortaise River, the monitoring of yellow eel by trap doesn’t exist, only a monitoring of silver eel by trap is made every year (between 1 and 5 months of sampling depending on the fish run period). This was modified in the 2020 national work plan.

3. For the Bresle electrofishing sampling, the sampling design was still under discussion in 2019. The new sampling design is 10 sampling stations every year and it will be included in the 2020 WP.

To avoid these errors and make data collection more reliable, a diadromous project officer, phd, was recruited in April 2019 to set up a procedure for collecting data from the 12 data providers. Meetings were organized in 2019 to define the procedure with the data providers.

In some rivers, additional sites or times than planned were fished to improve statistical power of data collected. This has and will have no financial impact.

For the other samplings, when the planned number is not achieved:

1. Considering migration periods (depending on river and life stage), in some rivers, the number of months sampled at a Migration control station could be modified (increased or decreased) so as to cover the whole fish run. These modifications will not affect the stock assessment as the survey period was sufficient to sample the whole migration period.

2. For all EMU, in freshwater, the collection of biological information on the yellow and silver eel was not made. Due to the delay in the authorizations of legal commitments related to the change of structure of the Agency (creation of the French office of biodiversity) the implementation of the operation was not possible during the fishing season. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.

3. For all EMU, the collection of biological information on the elver fishery was not made. Before setting up the collection of biological information on the elver fishery, it was decided to test first the procedures (for collecting individuals, transport and biometrics) on yellow and silver eels. As those procedures were validated in 2018, the sampling design for elvers was available in August 2019 and the first sampling will take place in November 2019 and then available for the 2020 report.

More specifically

Area	Water Body	Life stage	Method	% of achievement (100*P/M)	explanations	Corrective measures

North Sea / FR Sein	Bresle	yellow	Trap	50	The survey period was sufficient to sample the whole upstream migration period	Change in the 2020 work plan
North Sea / FR Sein	Bresle	yellow	Electrofishing	280	The sampling design was still under discussion in 2019. The new sampling design is 10 sampling stations every year	Change in the 2020 work plan
North Sea / FR_Meus , F_Rhin	Rhin	yellow	sampling/purchase	0	Due to the delay in the authorizations of legal commitments related to the change of structure of the Agency (creation of the French office of biodiversity) the implementation of the operation was not possible during the fishing season. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	The implementation of the operation is in progress with the provider for 2020 data
North Atlantic / FR_Bret	Fremur	yellow	electrofishing	175	New stations were sampled to provide better coverage on the downstream part of the Frémur. This has no economic impact	Change in the 2020 WP
North Atlantic / FR_Loir	Sèvre Niortaise	yellow	Trap	0	This was a mistake in the work plan. This line should refer to silver eel. There is no monitoring of yellow eel in the Sèvre Niortaise, which would be useless since glass eels are monitored.	Correct in the 2020 work plan

North Atlantic / FR_Loir	Loire	yellow	Sampling/purchase	0	Due to the delay in the authorizations of legal commitments related to the change of structure of the Agency (creation of the French office of biodiversity) the implementation of the operation was not possible during the fishing season. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	The implementation of the operation is in progress with the provider for 2020 data
North Atlantic / FR_Loir	Loire	glass	Sampling/purchase	0	Before setting up the collection of biological information on the elver fishery, it was decided to test first the procedures (for collecting individuals, transport and biometrics) on yellow and silver eels. After these tests, the collection of biological information on the elver fishery begin in 2020. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	As those procedures were validated in 2018, the sampling design for elvers will be available in August 2019 and the first follow-ups will take place in November 2019 for the season 2020.

North Atlantic / FR_Loir	Loire	silver	Sampling/purchase	0	Due to the delay in the authorizations of legal commitments related to the change of structure of the Agency (creation of the French office of biodiversity) the implementation of the operation was not possible during the fishing season. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	The implementation of the operation is in progress with the provider for 2020 data
North Atlantic / FR_Garo	Garonne	yellow	Sampling/purchase	0	Due to the delay in the authorizations of legal commitments related to the change of structure of the Agency (creation of the French office of biodiversity) the implementation of the operation was not possible during the fishing season. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	The implementation of the operation is in progress with the provider for 2020 data

North Atlantic / FR_Garo	Garonne	glass	Sampling/purchase	0	Before setting up the collection of biological information on the elver fishery, it was decided to test first the procedures (for collecting individuals, transport and biometrics) on yellow and silver eels. After these tests, the collection of biological information on the elver fishery begin in 2020. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	As those procedures were validated in 2018, the sampling design for elvers will be available in August 2019 and the first follow-ups will take place in November 2019 for the season 2020.
North Atlantic / FR_Garo	Dronne	Yellow	Video counting	50	The sampling design was modified from 12 months to 6 months as the new survey period was sufficient to sample the whole upstream migration period	Change in the 2020 WP
North Atlantic / FR_Garo	Dronne	yellow	Trap	3	The sampling design on the Dronne for monitoring yellow eels was never 90 nights. It is carried out on a routine basis each year for 3 to 6 nights per year.	Change in the 2020 WP

North Atlantic / FR_Garo	Dronne	silver	trap	40	Sampling design has been modified in 2018 in order to become more cost-effective. Number of traps has been reduced from three to one. Furthermore the fishing season is not over at the time of this report.	Change in the 2020 work plan
North Atlantic / FR_Adou	Adour	yellow	sampling/purchase	0	Due to the delay in the authorizations of legal commitments related to the change of structure of the Agency (creation of the French office of biodiversity) the implementation of the operation was not possible during the fishing season. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	The implementation of the operation is in progress with the provider for 2020 data
North Atlantic / FR_Adou	Adour	glass	sampling/purchase	0	Before setting up the collection of biological information on the elver fishery, it was decided to test first the procedures (for collecting individuals, transport and biometrics) on yellow and silver eels. After these tests, the collection of biological information on the elver fishery begin in 2020. This has no impact for the evaluation as the biological information on eel fisheries are not used for the moment by the WGEEL.	As those procedures were validated in 2018, the sampling design for elvers will be available in August 2019 and the first follow-ups will take place in November 2019 for

							the season 2020.

Salmon

Trap:
The routine number of trapping months on Bresle and Nivelle water bodies does not match but for the 2 rivers, survey period includes total run and will not influence the stock assessment. The routine number of trapping months on Bresle and Nivelle water bodies were modified in the next WP 2020-2021 to fit with the sampling design.

Electrofishing:

For electrofishing surveys, sampling design in the Bresle is still under discussion. Tests are made to assess the best sampling design for salmon in the Bresle. The project is to sample 9 stations over a 3-year cycle. The sampling design for the Nivelle electrofishing sampling is of 22 stations and not 19 stations.

These were modified in the next WP 2020-2021.

Biological collection:

The biological sampling of commercial and recreational freshwater fisheries are not in the current work plan, so they are not in this year's annual report. However, we wanted to indicate that 95% of the age, 99% of the length and 0% of the sex-ratio were registered and available in 2019. Sex data analysed by Q_PCR will only be available in September due to Covid19 (the analytical laboratory was closed in March-April 2019 due to containment). As suggested by the STECF last year, all the lines for freshwater salmon biological samples were not added in the actual report but they have been added to Table 1E in the new NWP 2020.

TEXT BOX 1F: INCIDENTAL BY-CATCH OF BIRDS, MAMMALS, REPTILES AND FISH

Region: North Atlantic and North Sea and Eastern Arctic

1. Results

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

2. Deviations from Work Plan

See text box 4A.

Data collection is reported for reference year 2019 only. Data collection reported for 2018 is not included as it was provided in the previous French annual report communicated in 2019.

3. Data quality

- Does the onboard observer protocol contain a check for rare specimens in the catch at opening of the codend?

Yes

If YES is the observer instructed to indicate if the codend was NOT checked in a haul?

No, since all fishing operations have to be monitored for incidental by catches.

- 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)?

No, only what falls on the deck is taken into account.

In large catches: does the protocol instruct to check for rare specimens during sorting of the catch (i.e. at conveyor belt)?

Yes

Is the observer instructed to indicate what percentage of the sorting or hauling process has been checked at “haul level”?

No, large specimen and accidental by-catches are taken outside the sampling procedure (ie. Always 100%)-Does the onboard observer protocol instruct to report on the use of mitigation (i.e. Escape Devices or Acoustic Deterrent Devices)?

Yes

- Does the sampling design and protocol follow the recommendations from relevant expert groups?

Yes, but only once a year when designing the following work plan

Provide appropriate references. If there are no relevant expert groups, the design and protocol have to be explained in the text.

ICES/WGBYC and national working group on marine mammal bycatch

- Are data quality issues taken into account?

Yes

- How are data (and samples) stored

Data are stored in the WAO application and in Harmonie central data base

TEXT BOX 1F: INCIDENTAL BY-CATCH OF BIRDS, MAMMALS, REPTILES AND FISH

Region: Mediterranean sea and Black sea

1. Results

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

For Corsican small costal fishery collected by DACOR project:

• 1 sample of *Caretta caretta* released alive.

• 3 samples of *Scyliarides latus* released alive.

• 1 sample of *Phalacrocorax aristotelis* discarded dead.

• 11 samples of *Squatina squatina* released alive and 1 discarded dead.

• 12 samples of *Mola mola* released alive and 2 discarded dead.

• 259 samples of other elasmobranch captured (85 released alive and 174 released dead or conserved for baits) not marketed as *Torpedo marmorata, Torpedo torpedo, Pteroplatytrygon violacea, Dasyatis tortonesei Dasyatis pastinaca, Myliobatis aquila …*

- **Sharks represent less than 0.7 % of these sampled catches.**

In total, incidental by-catches were observed in 12 UPS /19 UPS targeting pelagic species sampled in 2019 in Corsica.

In total, incidental by-catches were observed in 54 UPS /140 UPS targeting demersal species sampled in 2019 in Corsica.

• 572 samples of crustacean species released alive because of they were below the catch size limit, egged females or not marketed (which represent 30 % of these total catches sampled, conserved and discarded dead and alive).

What must be remembered for Corsica is that small coastal fisheries by-catches have the possibility of being released alive, particularly for undersized individuals, grained crustaceans, protected species...

2. Deviations from Work Plan

See text box 4A.

3. Data quality

See table 5A

- Does the onboard observer protocol contain a check for rare specimens in the catch at opening of the codend?

Yes the observer protocol contains a specific check for rare specimens and a categorisation of discards and by-catches (sharks, elasmobranchs, birds, mammals, reptiles ...). In Corsica, the sampling campaigns carried out in 2018 and 2019 were focused on small-scale coastal fishing and do not include trawls.

If YES is the observer instructed to indicate if the codend was NOT checked in a haul?

- In gill nets - and hook-and-line fisheries: does the onboard observer protocol instruct the observer to indicate how much of the hauling process has been observed for (large) incidental bycatches which never came on board (because they fall out of the net)?

No, only what falls on the deck is taken into account.

In large catches: does the protocol instruct to check for rare specimens during sorting of the catch (i.e. at conveyor belt)?

Yes

Is the observer instructed to indicate what percentage of the sorting or hauling process has been checked at "haul level"?

No, large specimen and accidental by-catches are taken outside the sampling procedure (ie. Always 100%)

-Does the onboard observer protocol instruct to report on the use of mitigation (i.e. Escape Devices or Acoustic Deterrent Devices)?

Yes

- Does the sampling design and protocol follow the recommendations from relevant expert groups?

Yes, but only once a year when designing the following work plan

Provide appropriate references. If there are no relevant expert groups, the design and protocol have to be explained in the text.

ICES/WGBYC and national working group on marine mammal bycatch

- Are data quality issues taken into account?

Yes

- How are data (and samples) stored

Data are stored in DACOR (OEC Data base) for Corsica and in WAO application and Harmonie for the gulf of Lion

TEXT BOX 1F: INCIDENTAL BY-CATCH OF BIRDS, MAMMALS, REPTILES AND FISH

Region: Other regions

1. Results

For purse seine fisheries in the Atlantic Ocean and Indian Oceans the coverage of observer programs set up is up to the mandatory requests of RFMOs (ICCAT and IOTC). Since 2018, the coverage level for this fishery for France has increased to 20% of the days at sea.

For purse seine fisheries, observers collect the fate of individuals at release as well as the fulfilment of best practices in place to enhance the post release survival of individuals discarded.

In 2019, a total of **479856** individuals in the Indian Ocean and **125708** in the Atlantic Ocean were recorded as incidental catch for the purse seine fisheries. It must be noticed that for sensitive species like whale shark and sea turtles, individuals were released alive. Sharks represent less than 1% of these catches.

	Atlantic		**Indian**	
Species group	**N**	**%**	**N**	**%**
Billfishes	494	0,39 %	204	0,04 %
Cephalopods	0	0,00 %	0	0,00 %
Cetaceans	0	0,00 %	0	0,00 %
Other bony fishes	120197	95,62 %	162952	33,96 %
Rays	14	0,01 %	37	0,01 %
Seabirds	0	0,00 %	0	0,00 %
Sharks	297	0,24 %	4683	0,98 %
Unknown	0	0,00 %	0	0,00 %
Tunas nei	4682	3,72 %	311944	65,01 %
Turtles	24	0,02 %	22	0,00 %
Whale shark	0	0,00 %	14	0,00 %
TOTAL	**125708**	**100,00 %**	**479856**	**100,00 %**

For the pelagic longline fishery based in La Réunion due to potential difficulties to embark observers on board a self reporting observer data is in place allowing to reach the mandatory coverage. Scientific observers collect the fate of individuals at release as well as the fulfilment of best practices in place to enhance the post release survival of individuals discarded.

In 2019, scientific observers reported 10344 individuals caught as incidental catches retained or discarded. It must be noted no bycatch of seabirds and cetaceans while sharks which are all discarded represented 13% of bycatch in number.

Species group	N	%
Tunas nei	2943	28,45 %
Billfishes	2736	26,45 %
Other bony fishes	2696	26,06 %
Sharks	1383	13,37 %
Rays	562	5,43 %
Turtles	18	0,17 %
Unknown	6	0,06 %
Cephalopods	0	0,00 %
Cetaceans	0	0,00 %
Seabirds	0	0,00 %
Whale shark	0	0,00 %
TOTAL	**10344**	**100,00 %**

2. Deviations from Work Plan

The deviation for incidental by-catch collection from the proposed WP for both purse seine fishery in the Atlantic and Indian oceans concerns the increase of the observer coverage from 10% to 20%.

3. Data quality

See table 5A

For both purse seine (PS) and longline (LL) fisheries, observers are equipped with the species identification cards developed by tRFMOs and have for instruction in their sampling protocol to produce an exhaustive list of species caught per fishing operation at the best specific resolution possible. All are equipped with a digital camera for rare specimens for identification purposes at the end of the trip. All pictures have a code to reaffect the individual to its fishing operation. During the training course the observer is trained on sampling methods allowing to estimate the total amount of bycatch and discards at the level of the fishing operation. Methods are explained in the observer manual given during the training course.

The sampling design set up for PS and LL fisheries follows the recommendations developed in the regional observer scheme of tRFMOs. This sampling design is documented in the observer manual updated every year.

Data quality is taken into account for purse seine and longline fisheries in the other regions. After each observer trip a debriefing of the cruise is organized between the observer and two scientists involved in the coordination of the observer program. This debriefing will permit to attribute a score to the quality of data collected.

PS and LL observer data are stored in the Observe database shared between France and Spain for the PS fishery. The development of the software achieved by IRD is discussed every year during the Observer meeting organized between Spain, France and some partner institutes from coastal countries. Currently the quality of data stored in the Observe database is controlled for the position of fishing operation deployed (and for the deployment of FADs for the PS fishery) by cross-checking latitude and longitude data in the database with VMS data. The development of a tool aiming to enlarge the number of variables controlled is ongoing.

(max 900 words)

Section 1: Biological Data

Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem: By-catch of PETS in the North Atlantic

SUPRA REGION: North Atlantic - REGION: ICES

1. *Aim of pilot study*

Numerous stranded common dolphins and harbour porpoise were reported on the French Atlantic coast during the winter periods of 2016-2017 and 2017-2018. According to scientific studies issued by Pelagis observatory, for 80% of the stranded marine mammals there was evidence of an interaction with fishing activities. A national working group was created in April 2017 in order to mitigate those by catch events. This pilot study is one of the outcomes of the national working group and aims to improve knowledge of the interactions between marine mammals and fishing activities. The at-sea sampling plan for the French fishing fleet of mid water trawlers in pairs will be reinforced to have more vessel*trip observed and collect data about by catch events (number of by catch, species, length, location, etc.). This study also aims to mark marine mammals captured with rings in order to evaluate the proportion of corpses stranded and those sank.

2. Duration of pilot study

This pilot study will begin in 1st December of 2018 and will finish on April 30th, 2019.

3. Methodology and expected outcomes of pilot study

The French fishing fleet of mid water trawlers in pairs has been identified as potentially responsible for mammal by-catch by studies of Pelagis observatory. These studies showed evidence of spatial correlation between mammal populations and vessels of this fleet. Therefore, the target population is the French fleet operating mid water trawlers in pairs in the Bay of Biscay. The sampling frame is a list of vessels which has been built by crossing information from the community fleet register, the active vessels during winters between 2015 and 2018 and expert knowledge provided by the producer organisations concerned by this fleet.
The primary sampling unit of this pilot study is vessel*trip. There is no secondary sampling unit since we assume that observers will observe all marine mammal by-catch.
The goal is to observe and collect data 30% of the vessel*trip of this fleet during the period of winter 2018-2019. The vessel*trip are chosen by the contractors according to the list of vessel. The contractor is instructed to contact all vessels and board as many as possible.
These contacts are registered and if the observer cannot go onboard the motive of the impossibility is registered.

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

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

Through this pilot study, between 1st of December 2018 and 30th of April 2019, 205 days at sea of mid-water pelagic trawlers in pairs have been observed, accounting for 28% of the fishing effort.

This French fleet is composed of 28 vessels and 26 of those have been observed at least during one trip. One trawler pair was not fishing for technical reasons.
31 common dolphins have been bycaught by the observed vessels.

This study has reached the objective to improve knowledge of the interaction between common dolphin and this fleet, thanks to a very significant increase of vessel*trip observed. The analysis done by Pelagis has been able to estimate that the pair mid-water trawlers were responsible for a small part (around 5%) of the total common dolphins bycaught estimated during this winter 2018-2019.

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

The pilot study continues in 2020, and is extended to other fleets for a better understanding of the phenomenon.

Pilot Study 2 bis: Level of fishing and impact of fisheries on biological resources and marine ecosystem: trophic interactions in the North Atlantic

Supra Region: North Atlantic (ICES)

1. *Aim of pilot study*

To reach a complete understanding of the feeding behaviour of predators, it is necessary to define their diet over their spatio-temporal occurrence, ontogenic stages and sex. Once this relationship is known, it is possible to better determine the impact of commercial fishing activity on biological resources and marine ecosystem.

In the Western English Channel (VIIe), fishing effort on *Raja montagui* and *Raja brachyura* is the highest within French waters. In 2016, about 600 tonnes of the 979 tonnes of *R. montagui* and 345 tonnes of the 665 tonnes for *R. brachyura* were sold within the auctions located along the studied area (FranceAgriMer, 2016). In those auctions, skates are mainly landed as whole fish given access to stomach contents necessary for the study. *R. montagui* is one of the smallest species found within the study area while *R. brachyura* is one of the largest. The skate species selection is driven by their high commercial value, the high amount of samples available and marked differences in their life history. This study will establish the feeding strategies and notably hierarchical importance of prey items in relation with sex, size and maturity of skates expecting that at a certain period of their life they feed on commercially valuable species. Potential competition for the resources between the selected species and the commercial fishing activity could be assessed. Secondly, it will be defined if a survey on predator-prey relationships could be temporally and spatially extended (at a national level) to enable a similar survey on the major species landed in French auctions and observe the evolution of the diet linked to the prey availability through time.

2. *Duration of pilot study*

One year: 2019

3. *Methodology and expected outcomes of pilot study*

The MNHN collects data on elasmobranches since 2012 in French auctions. The MNHN marine station based in Dinard has therefore developed a partnership with one of the most important wholesale fish trader “Pêcheries d’Armorique” from FIPECHE French group. This partnership allows the MNHN to acquire monthly samples (free of charge) of selected species from area VIIe. MNHN researchers will access to the specimen to collect biometry, stomach content and determine maturity. The diet in relation with sex, size and maturity stages will be determined by coupling isotopic analyses and prey identification in stomachs sampled. Isotopic ratio of preys will be determined from sampled collected during CGFS 2018 in the same area. Hence, the competition for resources between skates and the commercial fishing will be possible to analyse.

Furthermore, French landings will be closely analysed to determine if similar partnership and samples accessibility are conceivable in other areas.

Expected outcomes of the pilot study are:

- Evaluate if the survey of landed fishes permit to analyse the impact of the fishery on the predator-prey relationship for two species of *Rajidae* with a high commercial value.
- Determine the feasibility of such study at a national scale and on the major landed skate species in French auctions as well as a survey to assess potential temporal evolution in the diet of top predators such as Elasmobranches.

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

The French National Museum of Natural History (MNHN) marine station of Dinard has tested a new survey aiming to collect data on diet composition and feeding ecology by a valorization of elasmobranch commercial landings. It follows recommendations shared by the European Commission Joint Research Centre and ICES working groups to develop new approaches to meet the requirements of the MSFD's descriptors D3/ commercial fish and shellfish, D4/Food Webs. The final aim was the necessity to increase our knowledge on prey-predator relationships in order to describe and understand interactions between biological resources and fisheries.

Elasmobranch species are often landed ungutted by the fishermen and once they are sold, the wholesalers reject the viscera during the commercial process. This pilot study shows that it is possible to sample viscera by establishing a partnership with the wholesalers and so collect stomach contents as well as samples for biochemical analyses like isotopic ratios analyses. During 12 month between March 2019 and March 2020, three well trained biologists collected (10 sampling sessions), processed and data logged 186 stomach contents and isotopic samples in two divisions, the Western Channel (7e) and Bristol Channel (7f) for an overall full time equivalent of c.a. 40% and about 2500 € of expenses. In total, 85 blonde rays *Raja brachyura* were collected from 7e and 47 from 7f while 54 specimens of spotted rays *R. montagui* were collected from area 7f. Sampled specimens were selected according to sex, size class and maturity.

Despite a concern about decaying stomach contents – as some specimens may sit in ice up to 10 days – 59% of the prey items were observed at digestion's stages 1 to 3 enabling identification. Notice that this relatively low proportion is mainly explained by Polychaeta taxa which are rarely identified at a lower taxonomic level and Perciformes taxa which can still be identifiable at stage 4 digestion using otoliths and/or skeleton remains. Excluding those two taxa, proportion of identifiable species reached 98 %. Stomachs of *R. montagui* and *R. brachyuran* contained 29 taxa and 11 taxa, respectively. Contribution of each prey was evaluated by the Prey–Specific Index of relative Importance %PSIRI (Brown et al., 2012). Simulation of cumulative diversity curves (Ferry and Cailliet, 1996) suggested that a minimum of 100 stomachs would have been sampled per species and per division to obtain a reliable description of the diversity and structure of the diets. In this study, the sample size was sufficient in most subgroups at an "Order" taxonomic level.

First results clearly showed differences in feeding behaviors and diet composition between the blonde ray and the spotted ray although they were at the same trophic level. The blonde ray fed almost exclusively on different sandeel species, while spotted ray mainly consumed decapods. For both species, isotopic signatures and diet composition varied according to length class, suggesting an ontogenetic shift towards higher trophic levels (trophic level increases with total length). Differences between sexes were only detected from isotopic signatures for the spotted ray. To a lesser extent, although isotopic signatures varied significantly among maturity stages, no clear differences in stomach contents was observed.

As a conclusion, this pilot study clearly shows that the method developed by the French MNHN is reliable and sensitive enough to detect diet differences between zones, species, ontogenetic development stages, sex, and maturity stages. Isotopic ratio signatures are used to trace the trophic pathways and evaluate trophic level of species, while stomach contents enable to determine the composition of the diets. The combination of these two complementary methods enables to develop reliable indices of the trophic network quality and the effect of fisheries as requested by the MSFD. The project fishPi² suggests collecting stomach contents and biopsies only through at-sea research survey but this pilot study suggests that this method is limited for elasmobranch species due to small numbers of sampled specimens. Conversely, MNHN on-shore survey could supply data needed. Given that this survey is based on commercial catches, it is possible to deploy seasonal surveys thus including seasonal algorithms in the calculation of the ecological status indicators. Although the geo-referencing of the samples is currently less accurate than for at-sea surveys, the resolution is enough to calculate indices per ICES division and MSFD regions. Another strength of the on-shore method is to include nearshore and offshore samples provided by the fisheries. Conversely, the at-sea surveys are deployed with too large vessels to reach shallow coastal waters. One of the weaknesses of this on-shore survey is that small fish (eg. > 50cm TL) are not targeted by the commercial fisheries and hence are not included in the samples. The on-shore survey proposed here is statistically robust, sample size is easily completed and less time consuming than at-sea surveys. Lastly, elasmobranch species have a high rate of survival during at-sea research survey and need to be sacrificed for scientific purposes. Ethic considerations would be improved by choosing on-shore surveys of commercial landings, which would enable to prevent sacrificing elasmobranches and to release them during at-sea surveys.

As so, the present on-shore survey of commercial landings is a good candidate to be upgraded as a DCF survey. Indeed, during the Pilot Study, a team of only three biologists, totaling an equivalent of c.a. 40 % of full time labor, could follow up to three elasmobranch species per year in a one division.

The list of elasmobranch species to be surveyed using this method should be established following two criteria: 1. Landings importance; 2. Conservation status. Species are considered suitable when their catches are greater than 100T per year in a given subarea. In France in 2018, this criterion was met for nine species. All of these species are concerned in Western Channel and Celtic Sea, four in the Eastern Channel and North Sea and three in the Bay of Biscay where large wholesaler's networks are identified. In the Mediterranean, this method is currently unsuitable due to insufficient landings. From the JRC's 2018 reference lists of MSFD species and habitats, eight of the nine species are mentioned in one or another international/regional conventions (MSFD in Northeast Atlantic, OSPAR, IUCN Europe) as priority species to assess or for which information would be particularly important to obtain : Cuckoo ray *Raja naevus*, Thornback ray *R. clavata*, Spotted ray *R. montagui*, blonde ray *R. brachyura*, Shagreen ray *Leucoraja fullonica*, Tope shark *Galeorhinus galeus*, Small-spotted catshark *Scyliorhinus canicula*, Nursehound *S. stellaris*. The last species following both criteria is the Starry smooth-hound *Mustelus asterias*. In addition, Sandy ray *L. circularis* (EN), Undulate ray *R. undulata* (EN), Small eyed ray *R. microocellata* (NT) could be followed through focus sampling as they are locally landed in high volume. The other elasmobranch species mentioned in the MSFD reference list are not accessible by the current method because they are either sold gutted and/or in small quantities, banned from fishing, discarded or bycatch and released.

Before upgrading the survey to a national level, it is necessary to set the protocol: How many seasons should be considered per year? How many species should be collected per year and per region? These are some of the questions, strongly species dependent, that still need to be addressed in order to estimate costs, prior to upgrading. Nevertheless, this pilot study has provided clues on the technical feasibility and reliability of the onshore survey of commercial fish landings to provide and implement virtually cheap missing data required by MSFD and regional conventions.

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

The pilot study has reached the original expected outcomes.

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

Not applicable

PILOT STUDY 2 TER: LEVEL OF FISHING AND IMPACT OF FISHERIES ON BIOLOGICAL RESOURCES AND MARINE ECOSYSTEM: ASSESSMENT OF BY-CATCH MORTALITY IN THE INDIAN OCEAN

REGION: OTHER REGION – INDIAN OCEAN (IOTC)

1. Aim of pilot study

Fishing methods such as purse seining around drifting FADs, pelagic longlining are often non-selective with respect to the species captured, resulting in the capture of both the target and non-target species. Bycatch of non-commercial, unretained species can lead to their injury or death, and may be driving population declines of many species on a global scale. Marine megafauna such as sea turtles, seabirds, sharks and marine mammals appear to be particularly susceptible to bycatch mortality in fishing gear. However bycatch and discarding of less charismatic species is also viewed as a global problem. Despite the global concern regarding the magnitude of the bycatch issue still few studies have been set up to investigate bycatch mortality in the context of ecosystem-based fishery managements. Bycatch mortality can be categorized into capture mortality (e.g. immediate or hooking mortality) and post-release (or discard) mortality. Capture mortality is readily quantified, since it can be assessed by observers on board the fishing vessel at the time the fishing gear is pulled aboard. However, the assessment of post-release mortality is more problematic. Unpredictable and potentially large discard mortality rates can result from injuries due to fishing and handling, as well as the stress of capture plus the complicating effects of environmental conditions at the time of release. This pilot study aims to investigate the post-release mortality rate for some mobulids and pelagic shark species frequently observed in purse seine and pelagic longline fisheries in the Indian Ocean.

2. Duration of pilot study

Three years: 2017 – 2018 - 2019

3. Methodology and expected outcomes of pilot study

The behavior of post-release fish will be assess by using pop-up satellite archival tags (PSAT). Those tags will be deployed by well-trained observer. For each fish released after tagging both condition (injuries, exhauted, well alive) and handling practices will be monitored.

Expected outcomes of this pilot study are:

* to identify how condition and handling practices for post-released fish variables are relevant to quantify the post-release mortality,

* to validate « a guide of best practices for handling released fish » that will be disseminated to stakeholders,

* to infer the implications of discard mortality rates on overall fishing mortality.

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

Two types of electronic tags were combined to assess the post release mortality of the oceanic whitetip shark in tropical pelagic fisheries : survivorship PAT (sPAT) designed by Wildlife Computers to assess short term post release mortality (PRM) and programmed to pop-up at a maximum of 60 days after their deployment, and the miniPAT also from Wildlife Computers that is normally used for individual tracking purposes, the latter programmed to pop-up 180 days after their deployment.

Electronic tags purchased were shared between several EU fleet/countries to be deploy by well-trained human observers involved in the EU-FR DCF program in both purse seine and pelagic longline fisheries. All tags were geared with a Domeier's anchor for the purse seine while the large titanium anchor was prefered for the pelagic longline.

The deployment of eTags was realized during one year from May 2018 to May 2019. For the purse seine, the length of tagged individuals ranged from 136 cm to 200 cm total length (TL) and from 130 cm to 180 cm fork length (FL) either estimated or measured. For the pelagic longline, the length of individuals tagged ranged from 120 cm to 210 cm estimated FL (Table 1). The sex was determined for 11 individuals and females were dominant whatever the fishery, 7 females and 2 males for the purse seine and 2 females and no males for the pelagic longline. When provided, the time on the deck lasted by the individuals before tagging ranged from 2 to 10 minutes for the purse seine and 10 minutes for the pelagic longline. The status of individuals at haulback was roughly evenly distributed between "alive injured" (22%), "alive" (22%) and "alive good" (22%) for the purse seine. For the longline no "alive injured" individuals were tagged (Table 1).

Table 1 - Information regarding the electronic tag deployments (sPATs, and miniPATs) on oceanic whitetip sharks tagged and released from both purse seiners and pelagic longliners.

Tag Type	Serial Number	Gear	Length (cm)	Length type (*)	Sex	Fish condition	Time on deck (min)
sPAT	17P0574	PS	164	TL (M)	NA	Alive injured	10
sPAT	17P0631	PS	145	FL (E)	NA	Alive injured	3
sPAT	17P0651	PS	180	FL (E)	NA	Alive injured	3
sPAT	17P0673	PS	164	TL (M)	M	Alive injured	5
sPAT	17P0681	PS	136	TL (M)	NA	Alive good	5
sPAT	17P0712	PS	160	TL (E)	F	Alive good	NA
sPAT	17P0720	PS	200	TL (E)	F	Alive good	NA
sPAT	17P0722	PS	145	FL (E)	F	Alive	NA
sPAT	17P0723	PS	130	FL (E)	F	Alive	NA
sPAT	17P0726	PS	200	TL (E)	F	Alive good	NA
sPAT	17P0727	PS	150	TL (E)	F	Alive good	2
sPAT	17P0739	PS	180	TL (E)	M	Alive good	3
MiniPAT	17P0480	PS	165	TL (E)	F	Alive good	3
MiniPAT	17P0398	LL	195	FL (E)	F	Alive good	NA
MiniPAT	17P0579	LL	135	FL (E)	F	Alive good	10
MiniPAT	17P0595	LL	120	FL (E)	NA	Alive good	10
MiniPAT	17P0678	LL	210	FL (E)	NA	Alive	NA
MiniPAT	17P0680	LL	210	FL (E)	NA	Alive	NA

(*) TL = total length, FL = fork length, (M) = length measured, (E) = length estimated

For the purse seine, except for one sPAT that did not transmit data (did not pop-up or due to a transmission failure), the duration of deployments ranged between 3 days and about 60 days which corresponds to the programmed duration of a full deployment for sPATs (Table 2). Even for premature releases the duration up to 29 days was long enough to estimate post-release mortality based on satellite tag information. Amongst the 12 series of transmitted data, only one was considered due to an actual mortality after 3 days at liberty. The dead individual was “alive injured” prior to release after it ended up in the lower deck. However, a second individual caught during the same fishing set which also went through the lower deck, that was larger than the first one (180 cm total length compared to 145 cm), survived through the whole duration of the deployment (61 days). Therefore, for the 12 individuals (for which data were transmitted) released from purse seiners the survival rate reached 91.7 %.

For the pelagic longline, amongst the 5 tag deployments only three were analyzed because two of them prematurely popped-up after a few minutes or two days (Table 2). These premature pop-ups can be explained by the difficulties sometimes experienced when planting properly both the large titanium anchor and the Domeier anchor in the dorsal part of the body of the shark due to the thickness of the skin. For the 3 others tags, days at liberty ranged between 9 and 35 days and although all these pop-ups corresponded to premature releases the duration was long enough to inform post-release mortality if it had occurred (Table 2). For those individuals, no post-release mortality was observed therefore the survival reached 100%.

Table 2 - Position, dates of electronic tag deployments, pop-up, and at-release mortality diagnostic of oceanic whitetip sharks caught and released from both purse seiners and pelagic longliners.

Tag Type	Serial Number	Gear	Deployment date	Latitude (°)	Longitude (°)	Days at liberty	Diagnostic (*)	Mortality
sPAT	17P0574	PS	14/04/2019	-24.614	42.824	62	Full	No
sPAT	17P0631		18/11/2018	-3.441	47.722	3	Too deep	Yes
sPAT	17P0651	PS	18/11/2018	-3.441	47.722	61	Full	No
sPAT	17P0673	PS	12/10/2018	-3.862	50.605	29	Premature	No
sPAT	17P0681	PS	27/08/2018	-3.415	53.053	60	Full	No
sPAT	17P0712	PS	04/09/2018	0.172	51.220	31	Premature	No
sPAT	17P0720	PS	03/09/2018	0.008	51.609	60	Full	No
sPAT	17P0722	PS	08/08/2018	-5.186	62.178	59	Premature	No
sPAT	17P0723	PS	09/08/2018	-5.303	61.054	39	Premature	No
sPAT	17P0726	PS	03/09/2018	0.008	51.609	-	o pop	NA
sPAT	17P0727	PS	20/05/2019	-19.990	40.211	60	Full	No
sPAT	17P0739	PS	08/05/2019	-14.917	44.092	47	Premature	No
MiniPAT	17P0480	PS	19/02/2019	6.683	55.583	50	Premature	No
MiniPAT	17P0398	LL	12/05/2018	-32.750	34.866	14	Premature	No
MiniPAT	17P0579	LL	20/12/2018	-21.033	54.750	35	Premature	No
MiniPAT	17P0595	LL	14/01/2019	-20.673	52.745	9	Premature	No
MiniPAT	17P0678	LL	11/05/2018	30.012	34.613	0	Premature	NA
MiniPAT	17P0680	LL	18/05/2018	31.667	37.400	2	Premature	NA

The results obtained from this pilot study would tend to justify the efficiency of the retention ban as a conservation measure for oceanic whitetip shark in the Indian Ocean. These results are encouraging and might be considered as incentives for fishermen to apply the best practices when they discard sensitive species like sharks, rays or sea turtles. However additional results from a dedicated project with a larger deployment of electronic tags would be useful to better assess the efficiency of the retention ban measure set up by the IOTC.

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

The results permit to consider a complete achievement of the original outcomes expected from this pilot study investigating the post release mortality of the oceanic white shark in purse seine and pelagic longline fisheries.

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

Not applicable

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

General Comments

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 reseach 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.
In France, seven participations in international scientific surveys are submitted for the work plan 2017-2019. Five of them are mandatory according to Table 10 of the Annex of the EU-MAP Commission implementing decision EU/2016/1251 (IBTS Q1, W-IBTS-Q4, Sahmas, Medits, Medias). Two are long-term series already proposed by France in its WP for DCF funding under EMFF but not listed in the EU-MAP table 10 (CGFS and Orhago). The technical characteristics of these proposals are summarised in table 1G. Since the surveys are maintaining long-term series, the protocols have largely been validated, are often permanent (or lightly amended) and are repeated among years. The technical details are therefore valid for the period 2017-2019. Survey protocoles are available at the following hyperlink (see textbox 5A): http://www.ifremer.fr/SIH-indices-campagnes/survey.action The following boxes describe each of these surveys.

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

1. International Bottom Trawl Survey first quarter IBTS-Q1 – IBTS (French name)

1. Objectives of the survey

The surveys conducted by France every year during the first quarter, as part of the International Bottom Trawl Survey are primarily aimed at the annual estimates of abundance indices (total, by age and recruitment) for the main commercial demersal fish species exploited in the North Sea. The collected data are not only used by the international working groups for stock assessment but also provide inputs for numerous research programmes on the biology and distribution of selected species and on trends of North Sea fish populations. The first surveys were organised in the 1960s. France has participated in this ICES-coordinated international programme since 1976 in conjunction together with the six other countries bordering the North Sea.

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

Assessing fish stocks in the North sea may needs some data collection in the eastern part of English Channel, due to substantial stocks interactions and exchanges between the two sea areas. Therefore, the IBTS working group requested, in consultation with the Herring Assessment Working Group (HAWG), an extension of the sampling area for IBTS surveys to include the Eastern English Channel as far as 0°E; this has been done since 2009.

The main species considered are whiting, cod, haddock, Norway pout, herring, sprat, mackerel and plaice, for which analyses include age-reading and maturity staging. In 2016, the IBTS working group defined a new allocation of the sampling areas between countries in order to reduce time at sea. As a result, 55 hauls were allocated to the french IBTS survey, which samples the Southern North Sea and the Eastern English Channel over a period of 21 days (see table 1G of the annual report). The hauls are being carried out by using the research vessel "Thalassa" according to the IBTS protocols defined at international level under the coordination of the ICES WGIBTS.

Manual for the International bottom trawl surveys:

http://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%2010%20-%20Manual%20for%20the%20International%20Bottom%20Trawl%20Surveys%20-%20Revision%20IX.pdf

Age-length keys are built for the main fish species: whiting, cod, haddock, Norway pout, herring, sprat and plaice. Each fishing operation is systematically associated with a hydrological station and acoustic data are recorded for several echosounder frequencies and stored to be processed on shore.

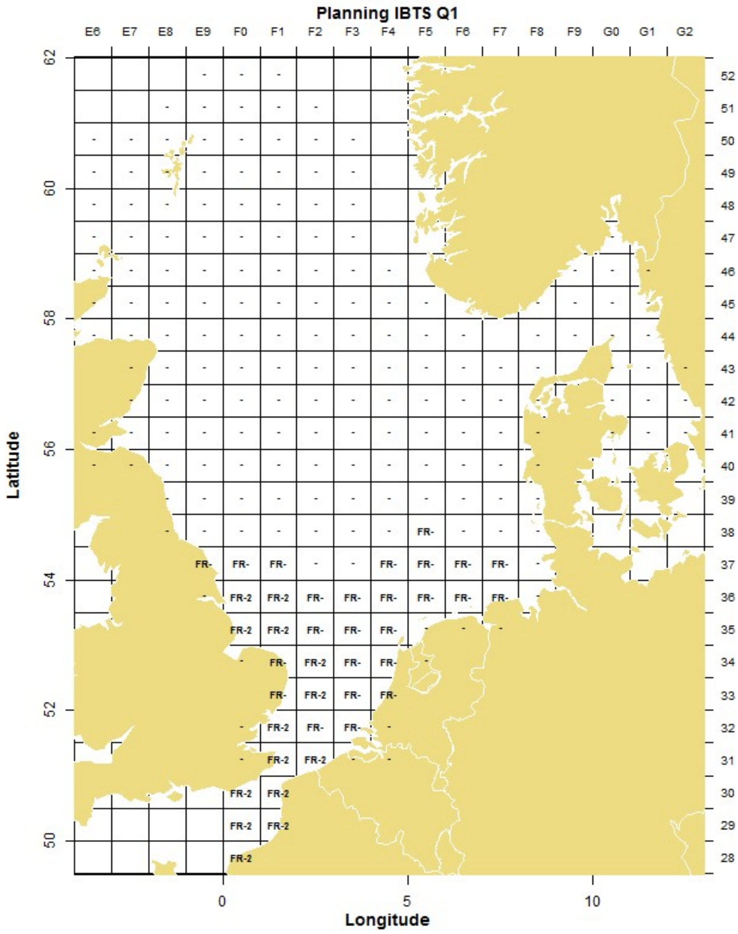
To estimate larval abundance indices (group 0 for herring and sprat), night sampling with a MIK (Methot-Isaac-Kidd) net is carried out following the standard protocol. Since 2006, continuous sampling of plankton (one sample per hour) is performed by means of the Continuous Underwater Fish Eggs Sampler device (CUFES). Sampling plans for monitoring phytoplankton, benthos and marine litter, as well as bird and mammal observations were initiated in 2008 (see table 1H of the annual report), thus demonstrating the multidisciplinary character of the IBTS survey and the efforts to ensure optimum use of the observation platform provided by R/V Thalassa.

The data are cheked and validated on board, where they are recorded in a temporary database. On land, quality checks are applied to the data both internally and by the ICES (Datras system (DATa base of TRAwl Survey) data screening module). Following their final validation on land, the IBTS data are uploaded to the "Scientific surveys" module of Ifremer's Harmonie database. All data sets are also transmitted in the ICES-stipulated formats.

Datras website: https://datras.ices.dk/

The protocols and scheduled operations lead to the calculation of ecosystem indicators. Raw data and indicators are available.

Website: http://www.ifremer.fr/SIH-indices-campagnes/index



IBTS French survey sampling scheme.

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

The southern North Sea area is sampled by France and partly by the Netherlands and Denmark.

In addition to reporting at national level (for use by industry, government agencies and Regions), the main assessment groups using IBTS data are: the Herring Assessment Working Group (HAWG) for the area “South of 62°N” (trawl data and larvae net station data), the Working Group on the assessment of demersal stocks in the North Sea and Skagerrak (WGNSSK), and the Working Group on Assessment of New species (WGNEW). The International Bottom Trawl Survey Working Group (WGIBTS) also needs the data.

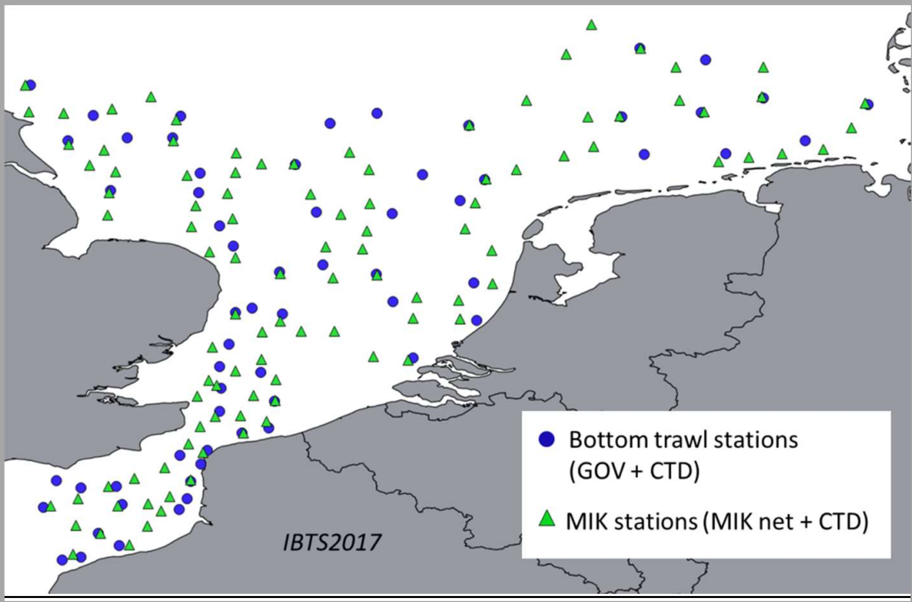
<u>4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used</u>

Hauls stations are allocated between countries by WGIBTS. There is no survey cost sharing agreement involving France.

<u>5. Explain where thresholds apply</u>

Not relevant

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



IBTS French survey – Number of trawl and MIK stations realised in 2019

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

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2019/IBTSWG%20Report%202019.pdf

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

The protocols and scheduled operations lead to the calculation of ecosystem indicators. Raw data and indicators can be found at the following address:

http://www.ifremer.fr/SIH-indices-campagnes/index.

9. Extended comments

Not relevant.

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

2. Western IBTS fourth quarter W-IBTS-Q4 - EVHOE (French name)

1. Objectives of the survey

The EVHOE survey (EValuation des ressources Halieutiques de l'Ouest Européen - Assessment of Fisheries Resources in Western Approaches) contributes to the Western IBTS 4th quarter surveys. The survey covers fish and invertebrate species in the Bay of Biscay and Central Celtic Sea and provides abundance indices for demersal species (total, recruitment and by age for selected species). Further, the collected data makes it possible to estimate the recruitment level of the several species of commercial interest. The data also contribute to numerous research programmes on the biology and distribution of selected species and on trends of fish and shellfish populations in the Bay of Biscay and Celtic Sea. In the Bay of Biscay the first survey took place in 1987. In 1997 the survey area was extended to include the Celtic Sea.

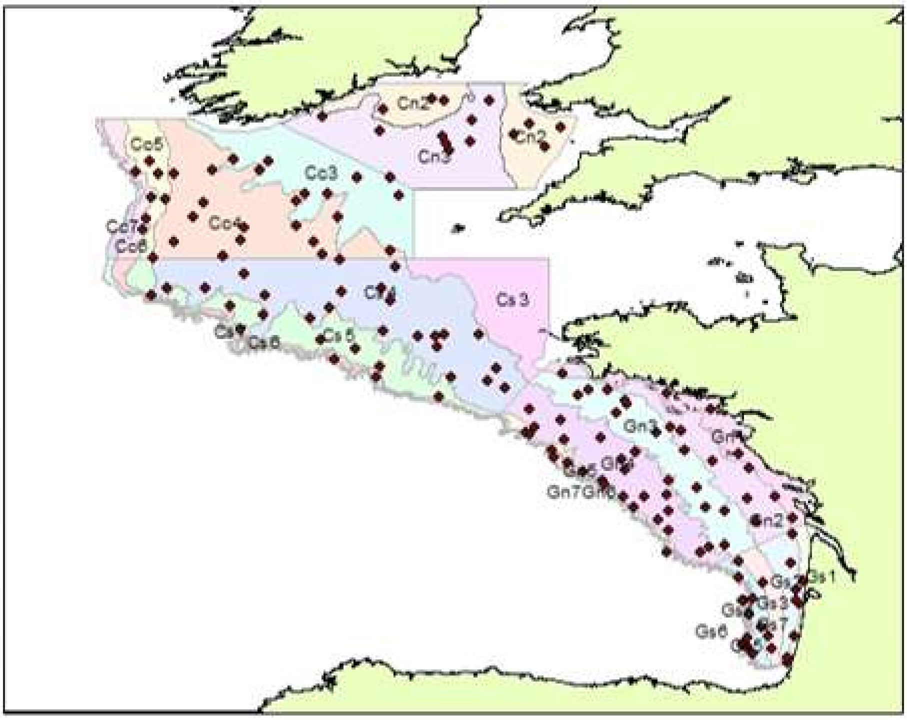
2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

Each year, bottom trawling is carried out from mid-October to early December (45 days, 155 stations, research vessel "Thalassa") using standard protocols (sampling plan, fishing gear, catch analysis protocol). The survey design was recently revised to become a stratified systematic unaligned design with fixed stations. The new designed was approved by WGIBTS and is implemented from 2016. For each haul, all fish are identified and measured. For several commercial species otolithes are sampled for age reading; species composition of benthos is regularly observed. Biological parameters for commercially exploited species are collected in accordance with the sampling plan designed and coordinated by the ICES IBTS working group. Temperature and salinity profiles are collected for each haul. Sampling plans for monitoring zooplankton, benthos and litter items, as well as bird and mammal observations have been implemented in recent years (table 1H of the 2018 annual report).

The main species relevant for stock assessment are cod, haddock, red gurnard, megrim, black and white anglerfish, hake, greater forkbeard, mackerel, and various rays and skates.

This series is also coordinated internationally by the ICES IBTS Working group, with protocols defined by the DATRAS project.

EVHOE manual: http://datras.ices.dk/Documents/Manuals/Manuals.aspx



W-IBTS-Q4 – EVHOE survey sampling scheme.

Data quality checking and data storage follow the same procedures as for IBTS (see previous section). The validated data are uploaded to the "Scientific surveys" module of Ifremer's Harmonie database. A data set is also transmitted to ICES in the stipulated formats.

The collected information contributes to the production of survey-derived ecosystem indicators (codes 1 to 4 of Appendix XIII of the technical Decision).

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

No other countries participate. The survey is internationally coordinated by WGIBTS.

In addition to national reporting purposes (for use by industry, government agencies and Regions), the main users of EVHOE data are the ICES working groups assessing stocks in the North Eastern Atlantic, the Celtic Sea and the Bay of Biscay: Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE), Working Group for the Celtic Seas Ecoregion (WGCSE) and Stocks, Working Group on Elasmobranch Fishes (WGEF), Working Group on Widely Distributed Stocks (WGWIDE) Working Group on Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP), in addition of course to WGIBTS.

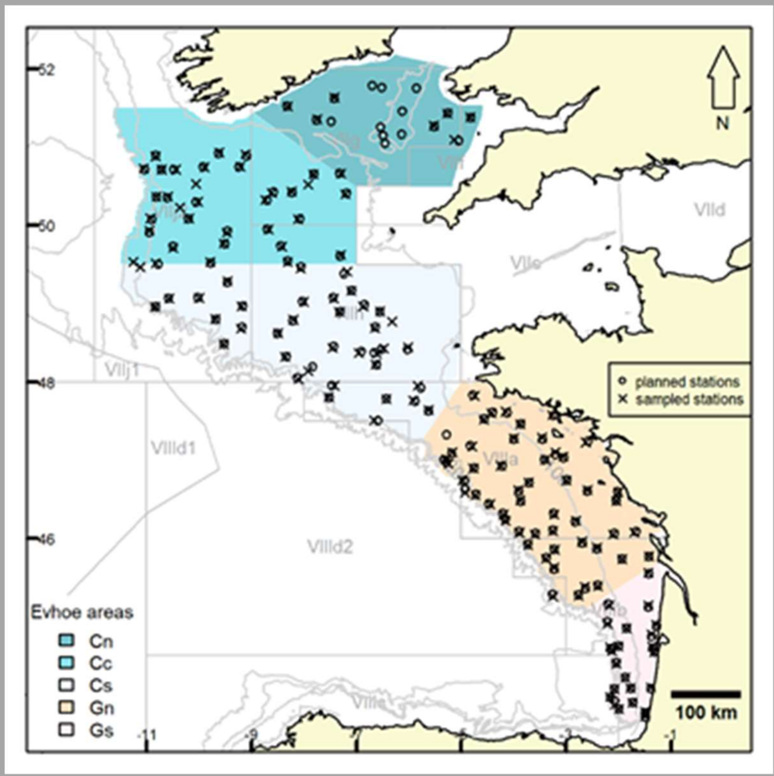
4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

Not applicable.

5. Explain where thresholds apply

Not relevant

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



Map showing sampling strata and 2019 hauls positions
for W-IBTS-Q4 – EVHOE survey.

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

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2019/IBTSWG%20Report%202019.pdf

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

Fishing data (abundance and biomass), as well as biological parameters (age, sex and individual lengths) are shared with IBTS working group and uploaded into ICES international database Datras.

Data collected during Evhoe are utilized to evaluate 21 species of fish (24 fish stocks) and 5 species of cephalopods within 4 assessment groups (WGEF, WGCSE, WGBIE, WGCEPH).

9. Extended comments

Not relevant.

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

3. Sardine, anchovy, horse mackerel acoustic survey SAHMAS – PELGAS (French name)

1. Objectives of the survey

The PELGAS survey is the French contribution to the international Sardine, anchovy, horse mackerel acoustic survey (SAMHAS) in the Bay of Biscay. The PELGAS survey aims at monitoring the Bay of Biscay pelagic ecosystem, in order to provide scientific data for implementing an ecosystemic management of Biscay living resources. The spatial and temporal dynamics of small pelagic fish populations are specifically monitored, with focus on anchovy. The survey takes place in spring, during anchovy spawning, to allow for the assessment of both eggs and adult stages. Anchovy, sardine, horse mackerel, sprat and mackerel biomass estimates and information on population structure (length and age structure…) are derived from the survey data. Anchovy and sardine eggs distribution and abundance, as well as hydrological conditions are also assessed during the PELGAS survey.

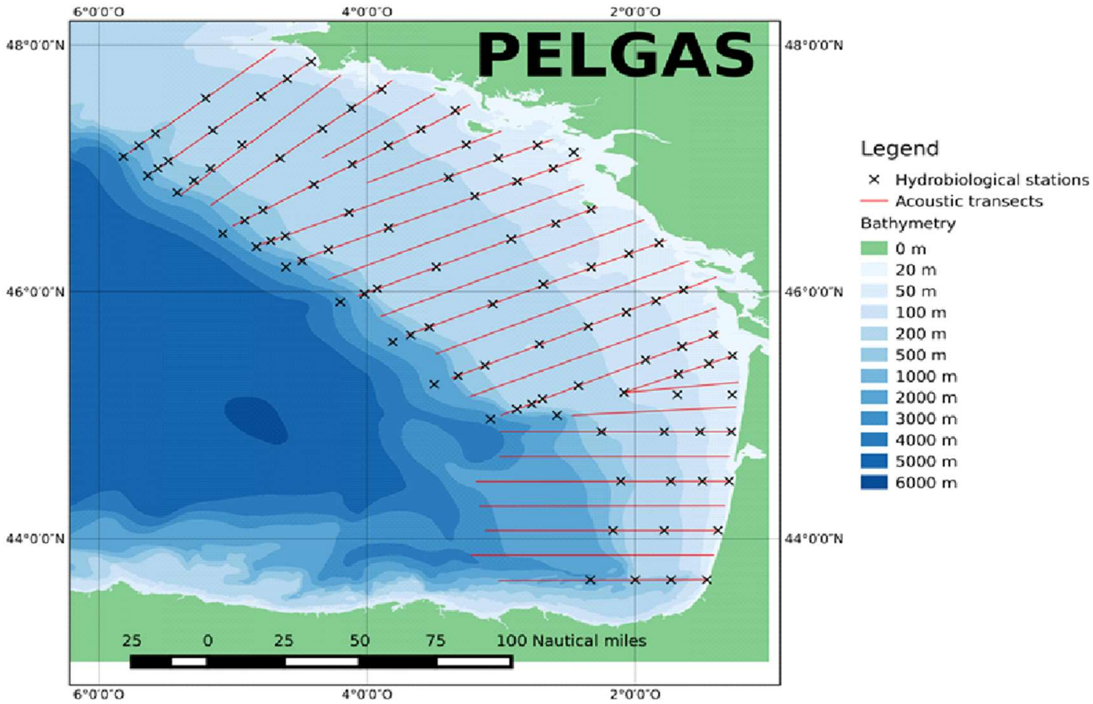
2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The PELGAS survey is internationally coordinated by the ICES WGACEGG[1] working group. Methods have been validated by WGACEGG and are described in details in the survey protocols manual[2].

The survey is performed in May onboard Research Vessel Thalassa. Data are collected continuously during daytime along 27 parallel transects covering the whole Bay of Biscay. Multibeam and multifrequency (6 frequencies) echosounders provide real time information on the spatial patterns and abundance of small pelagic fish. Simultaneously, a Continuous Fish Eggs Sampler (CUFES) provide complementary information on anchovy and sardine eggs. The presence and abundance of seabirds and marine mammals are also continuously recorded along transects during daytime. The species composition of fish school echoes are identified by midwater trawling, performed in an adaptative manner. CTD stations and zooplankton net casts are performed at night to characterize the small pelagic fish biotic and abiotic environment.

[1] http://www.ices.dk/community/groups/Pages/WGACEGG.aspx

[2] http://doi.org/10.13155/30259



Pelgas survey sampling scheme.

Acoustic data are recorded in real time and processed using the Movies3D software. CUFES samples are processed onboard using the Zoocam egg and mesozooplankton scanner system, which allows for the semi-automatic identification and counting of anchovy and sardine eggs. Fish biological samples are recorded and analysed at sea, including anchovy and sardine age readings. Acoustic and fishing data are combined using the EchoR R package, to derive small pelagic fish biomass estimates and distribution maps.

A commercial pair trawler, sponsored by national fundings, has accompanied Thalassa during Pelgas since 2007 to increase the effort devoted to fish echotraces identification. Catches made on commercial vessels are processed following the same protocol as on Thalassa.

Acoustic and fishing data, as well as biomass assessment results are stored in the EchoBase relational database. Acoustic and fishing data are shared within the ICES ACEGG working group. They will be stored in the ICES dedicated database when it becomes available.

Anchovy, sardine, mackerel, horse mackerel, blue whiting and boarfish biomass estimates derived from data collected during PELGAS are provided to ICES stock assessment groups (WGHANSA and WGWIDE).

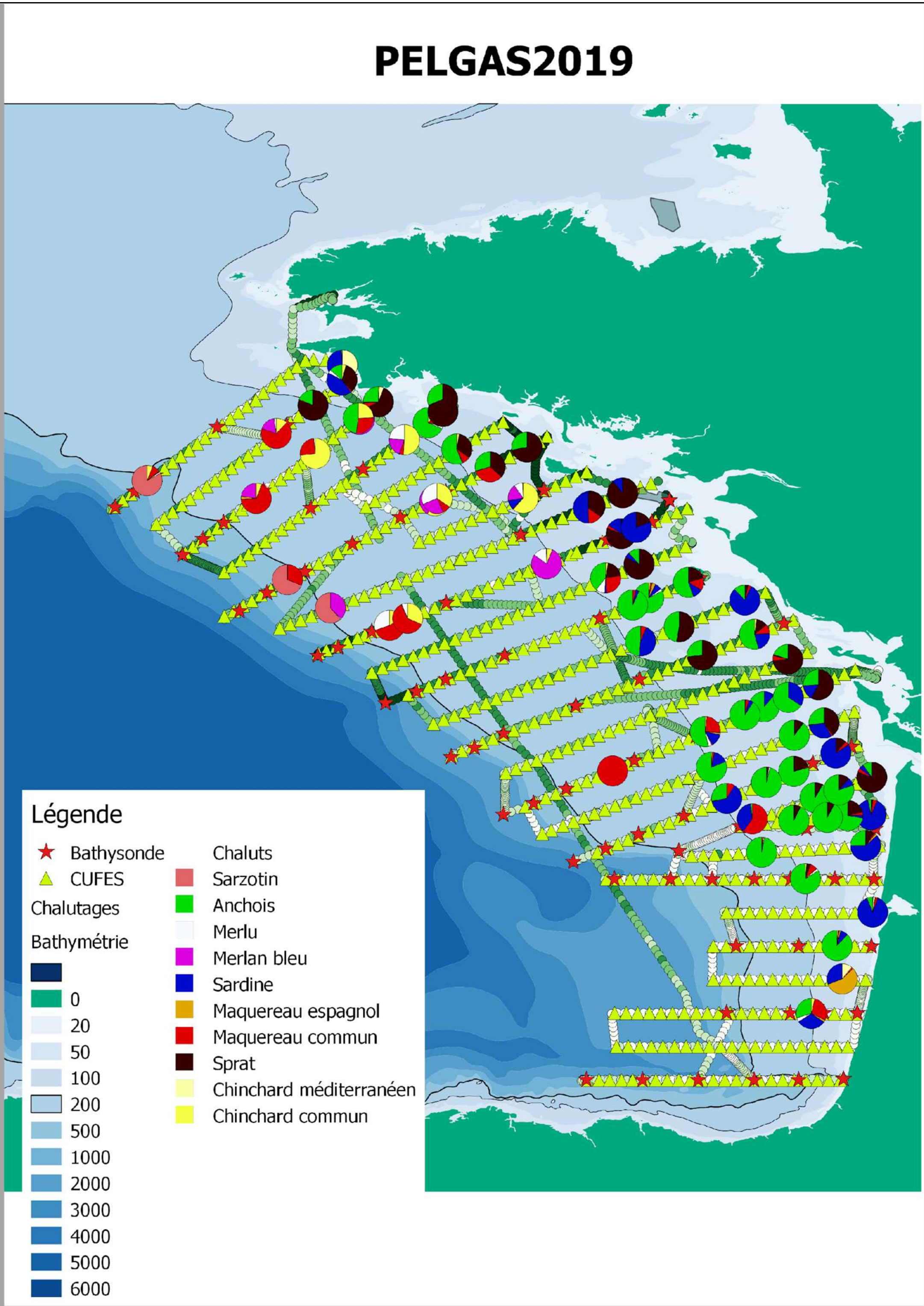
3. For internationally coordinated surveys, describe the participating Member States/vessels and the relevant international group in charge of planning the survey

The PELGAS survey is the French contribution to the international Sardine, anchovy, horse mackerel acoustic survey (SAMHAS), covering the Bay of Biscay. The survey is internationally coordinated within the ICES WGACEGG working group, comprising scientists from Spain, Portugal, France, United Kingdom and Ireland.

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

Not applicable.

5. Explain where thresholds apply Not relevant.
6. Graphical representation (map) showing the positions (locations) of the realized samples



Pelgas survey in 2019

PELGAS 2019 survey: yellow triangles: acoustic and CUFES samples; red stars: CTD/WP2 stations; pies: midwater trawl stations (green: anchovy, blue: sardine, yellow: horse mackerel; red: mackerel; black: sprat, light blue: blue whiting

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

http://ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2018/WGACEGG/WGACEGG%20report%202018.pdf

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

Acoustic and fishing data, as well as biomass assessment results are stored in the EchoBase relational database. Acoustic and fishing data are shared within the ICES WGACEGG working group. They will be stored in the ICES dedicated database when it becomes available.

Anchovy, sardine, mackerel, horse mackerel, blue whiting and boarfish biomass estimates derived from data collected during PELGAS are provided to ICES stock assessment groups WGHANSA and WGWIDE.

Environmental data are stored in the SISMER database and provided to MSFD to contribute to the ecosystem state assessment.

Link to the WGHANSA annual report:

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2019/WGHANSA/01%20WGHANSA%20-%20Report%20of%20the%20Working%20Group%20on%20Southern%20Horse%20Mackerel,%20Anchovy%20and%20Sardine.pdf

9. Extended comments

Not relevant

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

4. Mediterranean international bottom trawl survey MEDITS – MEDITS-FR (French name)

1. Objectives of the survey

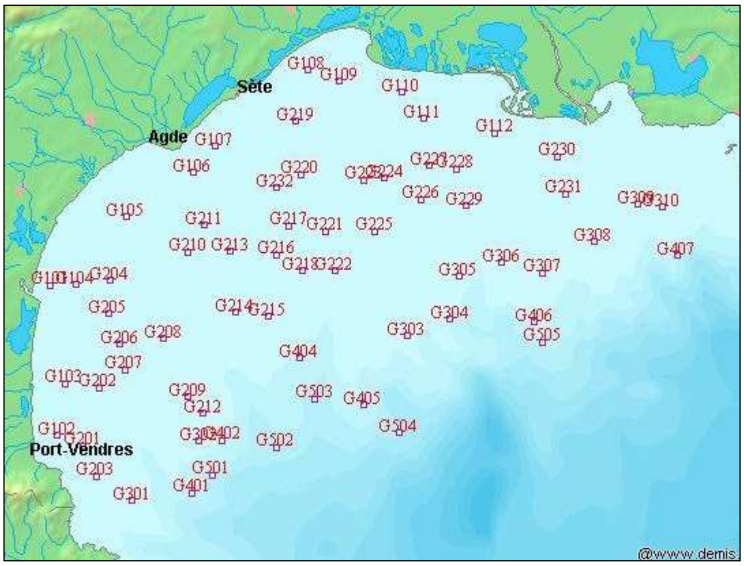
The aim of the MEDITS-FR survey (French component of MEDITS international bottom trawl programme) is to determine the distribution, abundance and length (age) structure of demersal fish and shellfish species in the trawlable areas between 10m and 800 m on the East coast of Corsica (GSA 8) and in the Gulf of Lions (GSA 7). The MEDiterranean International bottom Trawl Survey (MEDITS) programme was launched in 1993 at the instigation of the European Commission. It involves participants from all Mediterranean and Black Sea Member States, plus some third countries depending on the year.

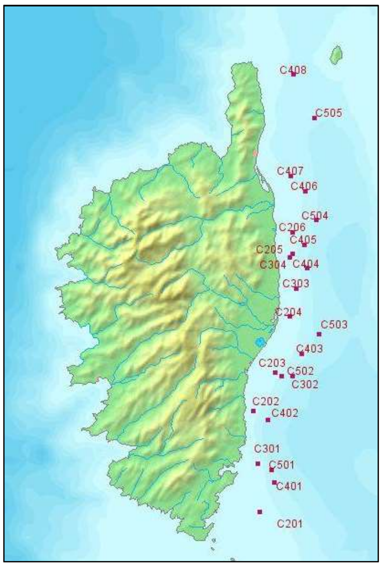
2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The international MEDITS series covers a large part of the Mediterranean and Black Seas.

hyperlink: http://www.sibm.it/SITO%20MEDITS/principaleprogramme.htm

Each year, around 90 bottom trawl hauls (respectively 64 in GSA 7 and 26 in GSA 8) are carried out by the research vessel “L'Europe” in late Spring (35 days at sea between May and early July) following a standardised protocol common to all the participant countries. Hauls positions are replicated as far as feasible from year to year, last thirty minutes (one hour >200m) and are coupled with regular measurements of bottom water temperature. All catches of fish, crustaceans and cephalopods are sorted, counted and weighed, according to the MEDITS standardised protocols. According to these protocols, 84 commercially important species are length measured, and sex and maturity stages are determined. Otoliths are collected for age reading for hake, red mullets (2 species), seabass, and gilthead seabream, and also illicia for anglerfish (2 species). Hydrological operations are performed at each trawl station. Litter items in the catch are sorted, counted and weighted and fish samples are collected for research studies (contaminants, diet,..).





MEDITS survey sampling scheme
(Gulf of Lions on left, eastern Corsica on right).

The data are validated by being reread and checked on board, where they are recorded in a temporary database. On land, consistency checks are applied to the data using automatic protocols. In addition, effort is maintained to improve continuously the quality of the data collected at sea: identification manual for the species caught during MEDITS surveys

(2007), photographic atlas of the stages of maturity of the main species (renewed in 2009 and 2010). Finally the yearly validated data set is uploaded to the “Scientific surveys” module of Ifremer’s central database “Harmonie”.

The data are used at international level by the MEDITS group. A common exchange format in three tables was agreed between the data providers but there exist no regional database for raw data. However, the MEDITS group makes data available (accessible to the general public)[3] standardised population indices validated by experts and which reflect the trends observed in populations abundances and catch composition.

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

The survey is coordinated by the MEDITS group.
France is the only country covering the gulf of Lions and eastern Corsica.

In addition to national data reporting (for use by industry, government agencies and Regions), MEDITS data are also used by GFCM working groups and sub-groups of STECF, e.g. SGMED.

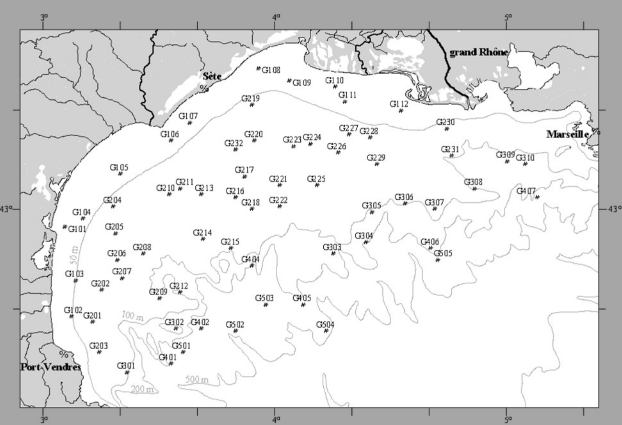
4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

There is no survey cost sharing agreement involving France.

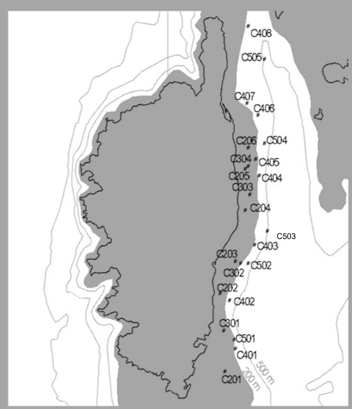
5. Explain where thresholds apply

Not relevant.

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



MEDITS – Gulf of Lions in 2019



MEDITS – Eastern Corsica in 2019

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

http://www.sibm.it/SITO%20MEDITS/principaleprogramme.htm

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3 http://www.ifremer.fr/Medits_indices/ or http://www.sibm.it/SITO%20MEDITS/principaleprogramme.htm

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

The data are used at international level by the MEDITS group. A common exchange format in three tables was agreed between the data providers but there exist no regional database for raw data. However, the MEDITS group makes data available (standardised population indices validated by experts and which reflect the trends observed in populations abundances and catch composition):

http://www.ifremer.fr/Medits_indices/

In addition to national data reporting (for use by industry, government agencies and Regions). . The data from the MEDITS campaigns have been and will be used to provide several indicators required by fisheries managers, for different purposes, international expertise (direct and indirect stock assessments) GFCM working groups and sub-groups of STECF, e.g. SGMED, national expertise (responses to referrals from the Directorate of Maritime Fisheries and Aquaculture), research, EAP (Ecosystem Approach to Fisheries), MSFD (Marine Strategy Framework Directive), and population indices, extension.

9. Extended comments

Not relevant

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

5. Pan-Mediterranean pelagic survey MEDIAS – PELMED (French name)

1. Objectives of the survey

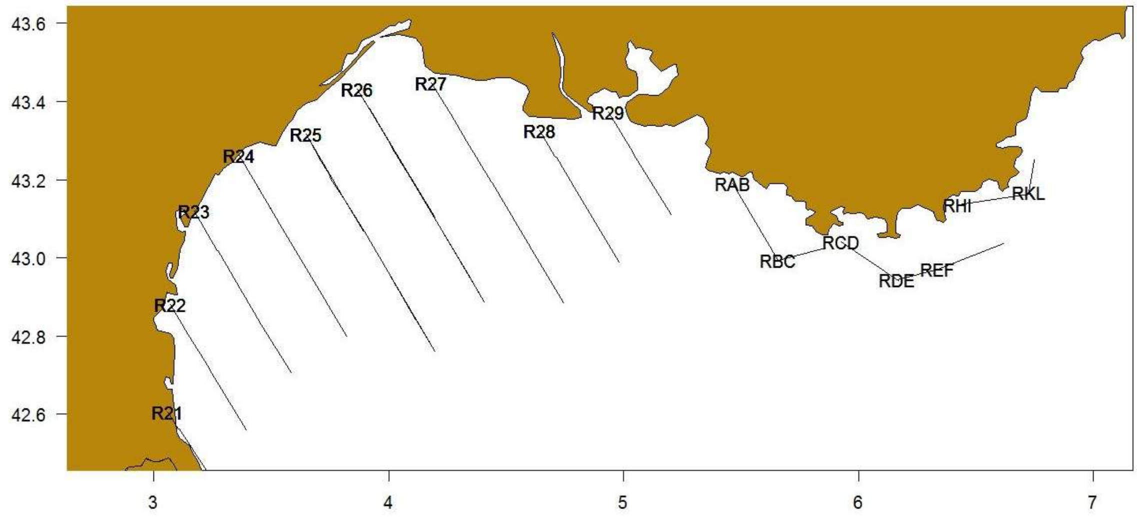
The aim of the French PELMED survey is to increase our understanding of the pelagic ecosystem in the Gulf of Lions using acoustic transects accompanied by pelagic trawl hauls to identify echo-traces detected. In particular it allows us to estimate biomass indices of the main small pelagic species in the Gulf of Lions, as well as their biological characteristics (length- and age-structure, sex ratio, maturity, body condition indices). Those indices constitute the basis of stock assessments for anchovy and sardines (GFCM and STECF). Further, the survey also permits a better characterisation of the spatial distribution of small pelagics both in the water column and geographically. Finally, the monitoring covers the entire ecosystem from physical measurements to seabird and marine mammal observation through to plankton sampling. All protocols are carried out according to the MEDIAS protocol and DCF requirements.

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

PELMED surveys started in 1993. In the Gulf of Lion, systematic sampling is performed along 9 parallel and regularly spaced transects (inter-transect distance = 12 nautical miles). From 2008 to 2013, an extension in the North Catalan Sea was conducted to better cover the small pelagics distribution. This extension is no longer conducted since 2016 as Spain now covers the area using the MEDIAS protocole. In replacement, the survey has been extended towards the East (see map below RAB -> RKL) to better cover the sardine habitat.

The protocol is similar to the PELGAS survey in the Bay of Biscay. Acoustic data are obtained by means of echosounders (Simrad ER60) and recorded at constant speed of 8 $nm.h^{-1}$. A 3D-echosounder (Simrad ME70) is also now installed and used discriminate schools. The size of the elementary distance sampling unit (EDSU) is 1 nautical mile. Discrimination between species is done both by echo trace classification and trawl composition. Each time a fish trace is observed for at least 2 nm on the echogram, the boat turns around to conduct a ~30 min-trawl at 4 $nm.h^{-1}$ to evaluate species composition and length distribution. While all 5 frequencies are visualized during sampling and help deciding when to conduct a trawl, only the energies from the 38kHz echosounder are used to estimate fish biomass.

Adopting an ecosystem approach, observations and counts of cetaceans and birds encountered on the survey transects are also made. Hydrological stations are performed in the middle of each trawl and at the ends of each transect. This comprises plankton nets, CTD casts, and water sampling through Niskin bottles.



Acoustic French part of MEDIAS survey sampling scheme (transects).

The MEDIAS protocol is applied. This guarantees availability of data under the required format, allowing potential use to estimate ecosystem indicators linked to the scientific surveys (codes 1 to 4 of appendix XIII of the technical Decision 93/2010/EU).

Sixteen transects totalling around 325 nautical miles of acoustic acquisition are planned, along witch two or three daily trawl hauls coupled with hydrology parameters collection will be performed on echo- detections not exceeding the 200-metre isobath.

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

In addition to national data reporting (for the industry, government agencies and Regions), PELMED data are also used by GFCM working groups and sub-groups of STECF such as SGMED. Further, data are presented and surveys discussed each year at the annual MEDIAS working group.

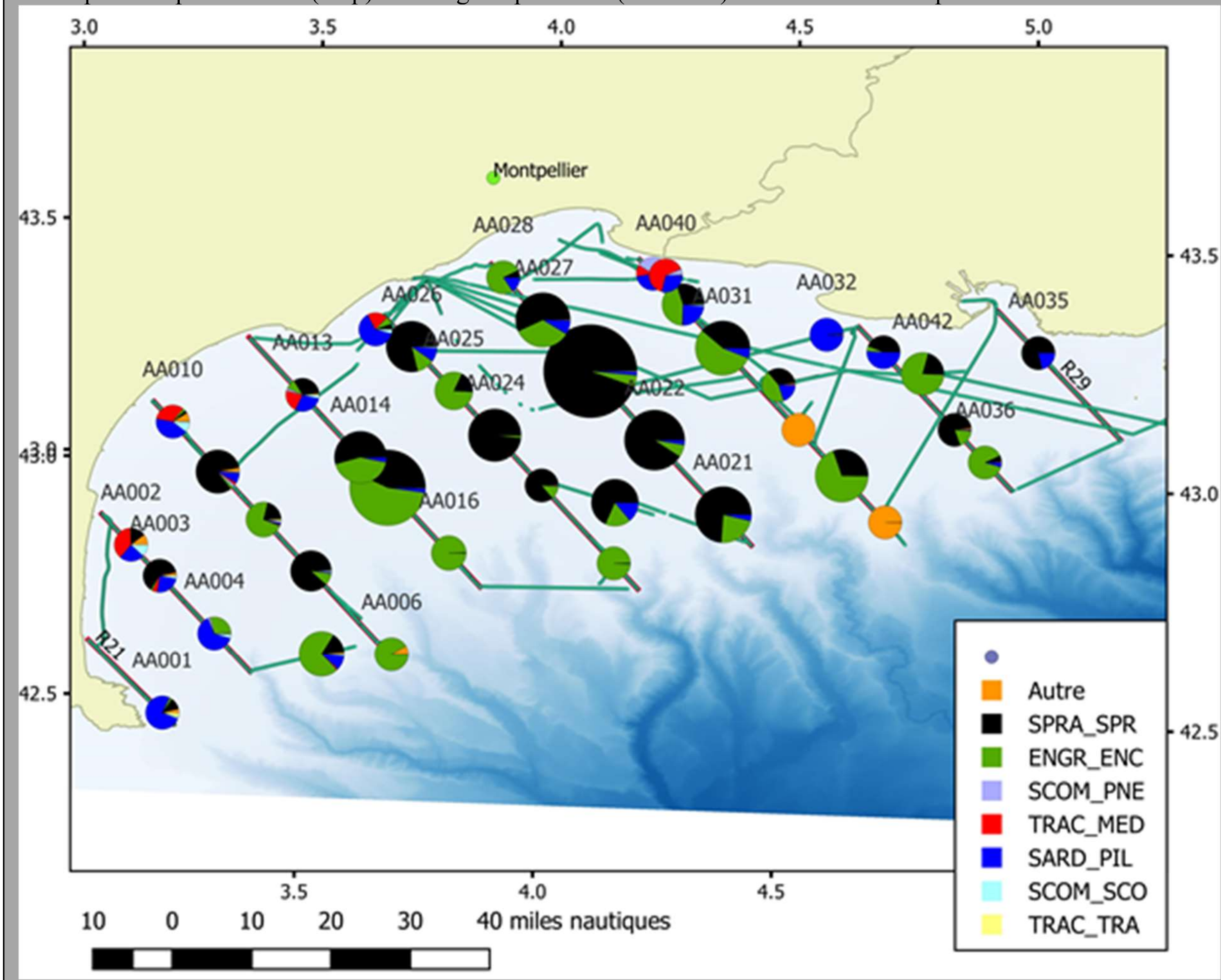
4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

Not applicable

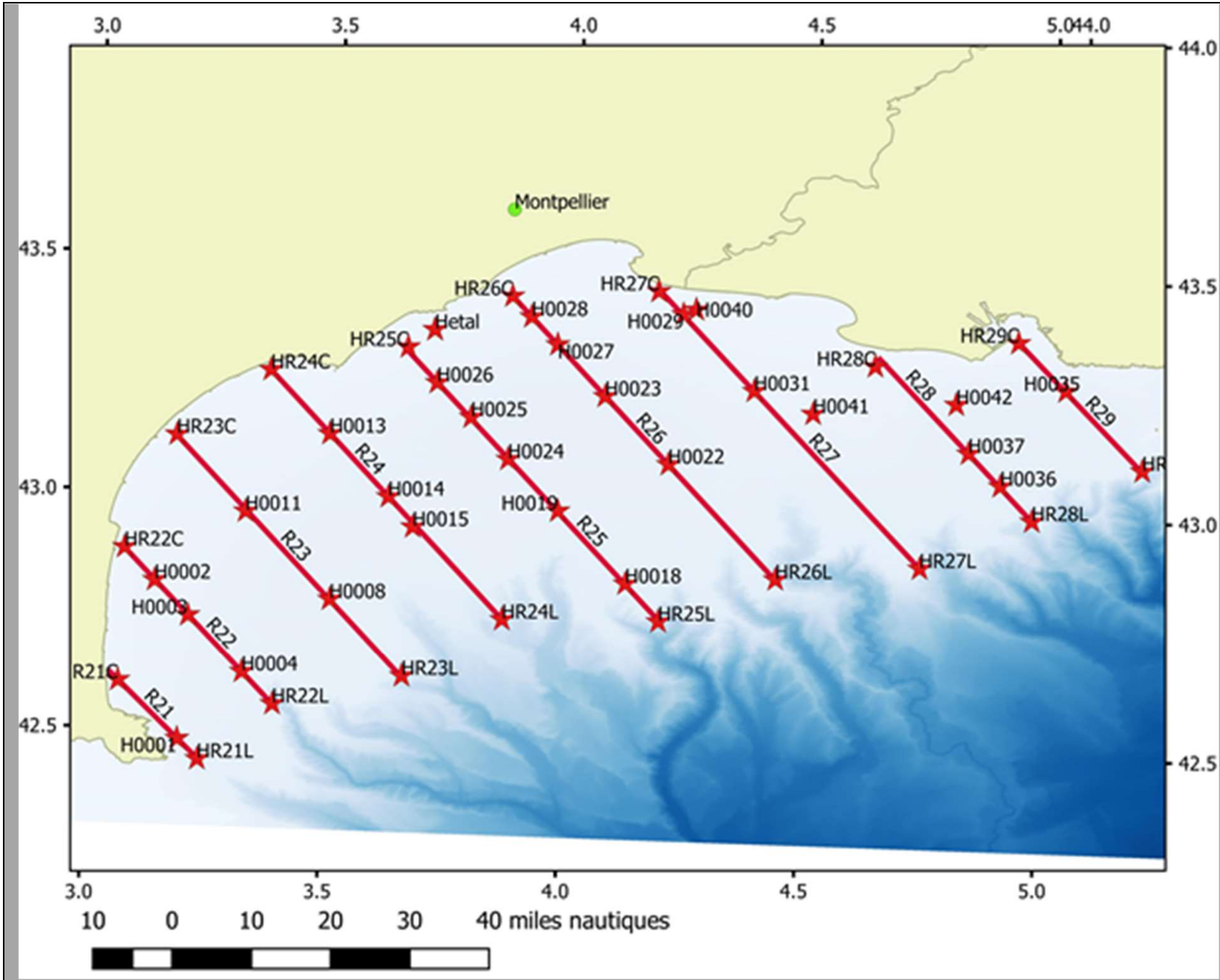
5. Explain where thresholds apply

Not relevant.

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



Map of 2019 trawl positions and species composition. The gray lines represent the vessel course



Map of 2019 hydrological stations

7. For internationally coordinated surveys, provide a link to the latest meeting report of the coordination group
http://www.medias-project.eu/medias/website/meetingrep/func-startdown/122/

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

Biological data collected during the Medias survey are mainly used for stock assessment of small pelagic fish (Sardine and Anchovy) realized within GFCM working groups and sub-groups of STECF. For Sardine, biomasses estimates are used to calibrate a 2-stage biomass model. This model requires a series of catch as well as 2 independent tuning series (an index of recruitment and an index of adult biomass). Both tuning indices are obtained from the Medias acoustic survey. In regards to Anchovy, the stock assessment relies on a direct estimation of biomass with no analytical model being used. Thus, Medias data are used to calculate biomass reference points (e.g. Blim defined as the lowest biomass from which a recovery has been confirmed) based on empirical analysis of time series of biomass estimates.

Hydrological and biological data collected during Medias survey are used for the purposes of the Marine Strategy Framework Directive (MSFD) French legislation. These data are sent to the national scientific pilot of the different MSFD descriptors (e.g. contaminants, food web, pelagic habitat, commercial species) to derive qualitative descriptors of environmental status.

9. Extended comments

Not relevant

Text Box 1G: List of research surveys at sea

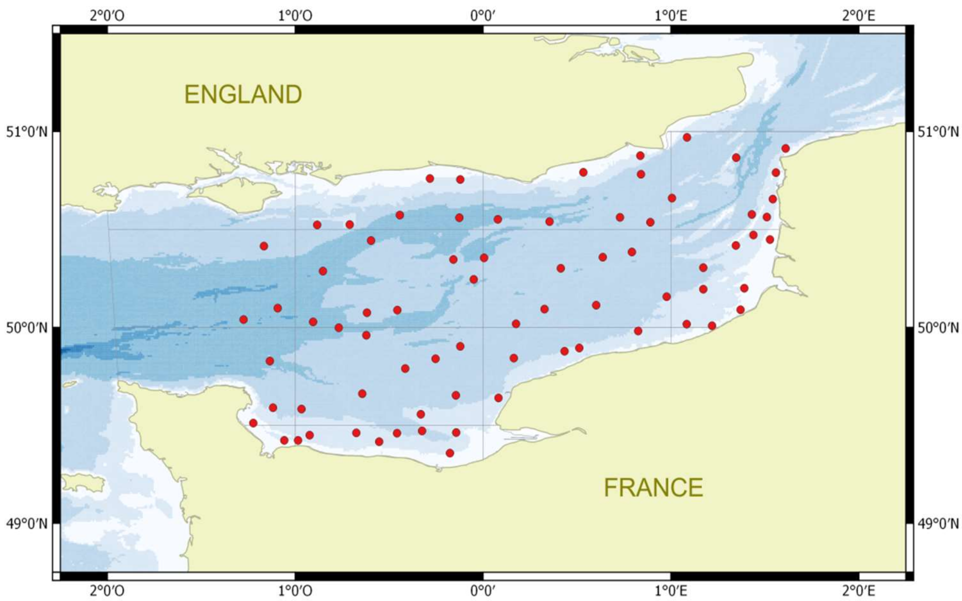
6. Western IBTS fourth quarter W-IBTS-Q4 – CGFS (French name)

1. Objectives of the survey

The Channel GroundFish Survey (CGFS) aims at estimating the abundance and distribution of demersal fish stocks, independently of commercial fisheries data, in the ICES area 7d (eastern English Channel). This bottom trawl survey, conducted in October every year since 1988 following a standard protocol, provides data for exploited stocks (total abundance; recruitment index; spatial distribution; maturity; age/size structure). This survey also collects data on non-commercial species and other biological compartments (benthic invertebrates, plankton…) as input to an ecosystem approach to fisheries.

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

Since 1988, the ICES area 7d has been sampled annually during 30 days in October following a fixed sampling design with about 88 trawling stations. At the time of the vessel change in 2014 from R/V Gwen Drez to R/V Thalassa, the sampling scheme was optimized and is now composed of about 70 stations, sampled in 16 days. Both the intercalibration realised between the vessels and the optimized sampling scheme have been validated by WGIBTS. CGFS follows the standard protocol[4] and uses the standard bottom trawl "gear A" (GOV 36/47) to conduct 30min tows during day-light. All individuals from the haul are sorted, identified, weighted, counted and measured, according to IBTS standardised protocols. A subset of species is also subject to sex and maturity determination associated to otolith sampling for age reading, in relation with DCF requirements (plaice, sole, cod, whiting, red mullet, pouting, red gurnard, seabass). In addition to fish and cephalopods, benthic invertebrates and gelatinous organisms are also determined, counted and weighed. Litter in the trawl is sorted, counted and weighed at each station and additional biological sampling may be conducted for different purposes (e.g. MSFD requirements, request from ICES working groups, studies on genetics, food web, etc.). Hydro-biological data are gathered from CTD profiles, water sampling through Niskin bottles and zooplankton nets. Fish egg sampling (mostly sardine and horse mackerel eggs) is realised en route using a pumping device associated to semi-automatic identification software. Finally, onboard observers record birds and mammals encountered.



W-IBTS-Q4-CGFS sampling scheme.

[4] http://www.ices.dk/marine-data/Documents/DATRAS%20Manuals/Addendum_2_Manual_IBTS_Western_and_Southern_Areas_Revision_III.pdf

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

The CGFS survey is coordinated by WGIBTS. As such, the data collected during each survey are validated (on board and at land) and formated before being uploaded to the common database DATRAS. Global abundance or biomass indices are computed as well as abundance-by-age indices for some species, to be used in the stock assessment of plaice, red-mullet, seabass, squids, cuttlefish, horse mackerel and elasmobranchs by the ICES working groups WGNSSK WGCEP, WGWIDE, WGEF, WGCSE.

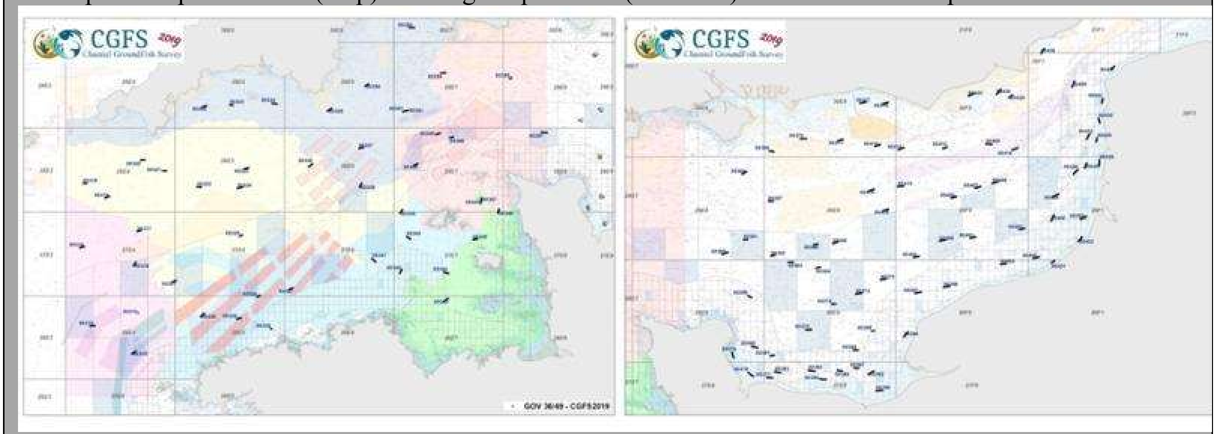
4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

Not applicable.

5. Explain where thresholds apply

Not relevant.

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



Map of2019 in the Eastern Channel (left) and the Western Channel (right)

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

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2019/IBTSWG%20Report%202019.pdf

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

The protocols and scheduled operations lead to the calculation of ecosystem indicators. Raw data and indicators can be found at the following address: http://www.ifremer.fr/SIH-indices-campagnes/index

Abundance-at-age indices for red mullet and plaice, and global indicies for seabass, cuttlefish and squids have been provided to the relevant ICES working groups. Hydrological and biological data collected during the survey are used for the purposes of the Marine Strategy Framework Directive (MSFD) French legislation.

9. Extended comments

From 2018 onwards the CGFS sampling area has been extended towards the western English Channel (ICES area 7e) where about 48 stations are sampled with a bottom trawl adapted to the hard substrate of this area (GOV 36/49). Data from the area 7e is expected to be submitted to DATRAS in the upcoming years.
In 2019, The objective in fish hauls and hydrology was 122 (instead of 140 as described in table 1G).

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

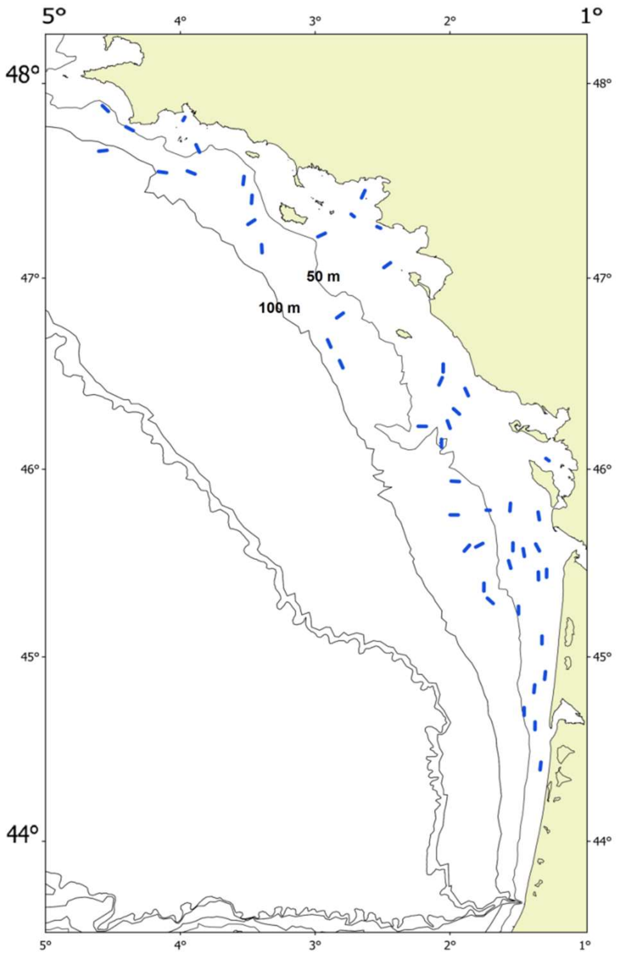
7. Observation des Ressources HAlieutiques benthiques du GOlfe de Gascogne) – ORHAGO (French name)

1. Objectives of the survey

The Bay of Biscay ORHAGO beam trawl survey aims to collect data on composition, distribution and change in relative abundance of benthic fish fauna on the continental shelf (<100m) on a yearly basis (quarter 4). Information are collected on length frequency for all the fish, with biological information (age, maturity) for some species. The main target species is sole, other abundant commercial species include (top 10 by decreasing numbers/hour in 2015): Norway lobster, hake, brown shrimp, cuttlefish, horse mackerel, common whelk, common spider crab, small-spotted catshark, greater weever and common prawn. Since 2013, the benthos is exhaustively sampled for all the hauls (for determination at the laboratory).

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

The ORHAGO survey was launched in 2007 to fulfil the need of a fishery independent abundance index for the Bay of Biscay sole stock which has been pointed out since many years by successive ICES WG and their review groups and as well as in ICES advice.
In accordance with ICES agreed gear for flatfish abundance surveys , the gear is 4m-beam trawl with chain mat, 50mm mesh in the net et 40 mm mesh in the cod-end.
The sampling plan was designed to ensure full coverage of the sole habitat in the Bay of Biscay during a period (November-December) for which fish behaviour and distribution was suitable for obtaining an unbiased abundance index (young fish move offshore when coastal waters become colder and before the concentrations of the spawning season). The sampling design is systematic sampling with 49 reference stations. The design was validated in 2007 by the ICES WGBEAM working group.



ORHAGO sampling scheme.

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

The ORHAGO survey is coordinated by the ICES WGBEAM working group.
WGBEAM has approved the calculation method for the Bay of Biscay sole stock abundance index at its 2013 meeting (daylight hauls for a set of reference stations). The same year, an interim benchmark approved the inclusion of the ORHAGO survey in the Bay of Biscay sole stock assessment. Since 2013, the ORHAGO survey has consequently been used to assess the status of this stock (WGMMM in 2013, WGBIE in 2014-2016).

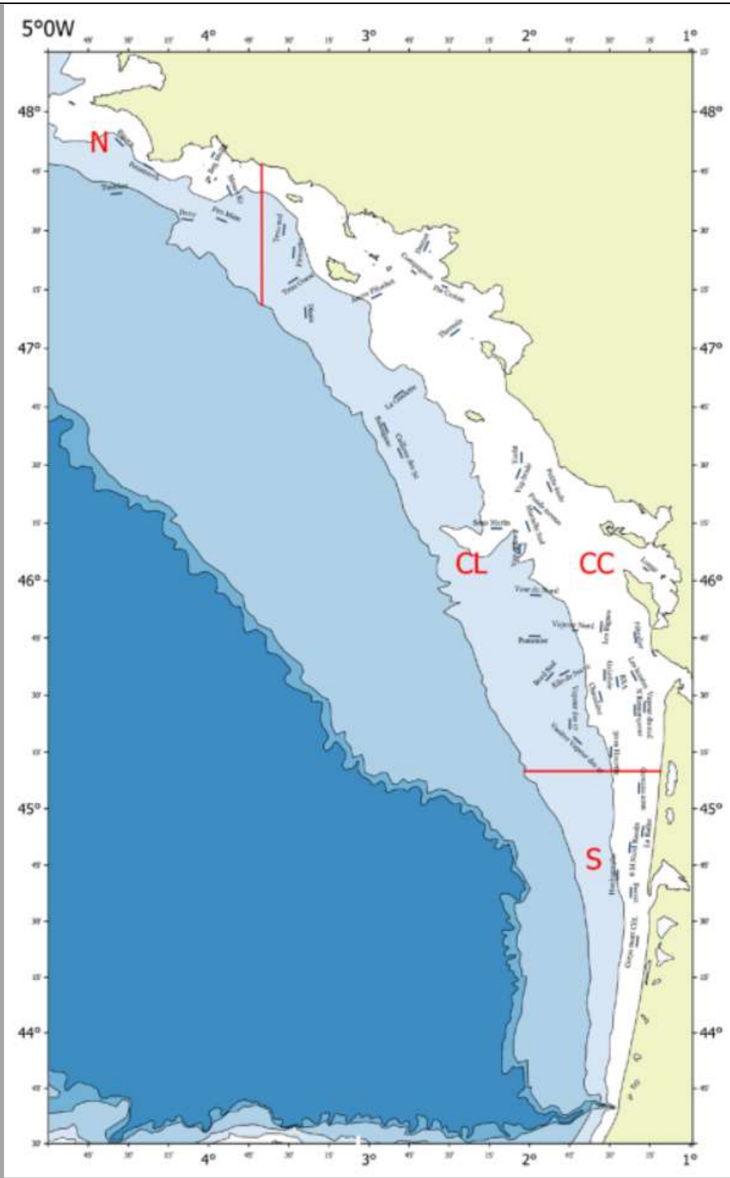
4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

Not applicable.

5. Explain where thresholds apply

Not relevant.

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



2019 ORHAGO sampling stations

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

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2018/WGBEAM/WGBEAM%20report%202018.pdf

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

The ORHAGO abundance indices are used to assess the state of the Bay of Biscay sole stock by ICES (Working group WGBIE). The weights of these indiindices in the XSA tuning process range from 96% to 66% from age 2 to 4. Therefore, the assessment of this stock largely depends on the quality of the ORHAGO abundance indices. The ORHAGO survey is also the only survey to provide abundance indices relevant for four other flatfish species abundantly present on the continental shelf of the Bay of Biscay (Arnoglossus laterna, Buglossidium luteum, Microchirus variegatus and Dicologlossa cuneata). Since 2015, all the benthos species have been identified and counted.

9. Extended comments

Not relevant

SECTION 2: FISHING ACTIVITY DATA

TEXT BOX 2A: FISHING ACTIVITY VARIABLES DATA COLLECTION STRATEGY

General comments

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.

STECF recommended/requested a disaggregation of reported data accounting for the different variables/fishing technique/vessel length, that was aggregated until now and in the 2019 WP.

This request was taken into account in this annual report, therefore strongly increasing the number of lines as compared to the WP. This deviation is the result of an improvement of the French reporting.

The accepted WP for 2020 takes care of this evolution and therefore the discrepancy between WP/AR will not occur anymore in the future.

When the French authorities submitted a revised version of the national work plan for data collection in the fisheries and aquaculture sectors for 2019, only an estimation of the fleet segments which will be effectively active in 2019 could be done (vessels could change fishing activity and gears between 2018 and 2019).

In table 2a, are detailed :

- the few (with very few vessels concerned) new fleet segment which have been observed in 2019, these are identified with grey background text.
- The few segments which does not exist anymore, these are identified with red crossed text.

TEXT BOX 2A: FISHING ACTIVITY VARIABLES DATA COLLECTION STRATEGY

all supraregions/fleets (except others regions - 24-< 40 m, 40 m or larger)

1. Description of methodologies used to cross-validate the different sources of data. 2. Description of methodologies used to estimate the value of landings. 3. Description of methodologies used to estimate the average price (it is recommended to use weighted averages, trip by trip)

The French fishing activity data are based on the following sources of information:

1. French fleet register (vessel characteristic (length overall, kilowatt, gross tonnage, age of the vessel), geographical indicator, total number of vessels)
2. Annual fishing activity calendars survey (active/inactive vessels, typological classification of vessels by fleet/fishing technique coding, fishing area, métier)
3. Logbooks (over 10m' vessels) and monthly declarative forms (less 10m' vessels, declarative forms adapted to the special features of the small-scale coastal fisheries) (total weight of landings by species, fishing effort (number of trips, days at sea, fishing days and hours at sea), fishing area, gear and mesh size)
4. Sales note data (total weight and value of landings by species)
5. Geolocalisation data (inc. VMS data) (fishing effort (number of trips, days at sea, fishing days and hours at sea), fishing area)
6. Complementary on-site sampling of trips (catch assessment survey) (total estimates of weight and value of landings by species, fishing effort estimates (number of trips, days at sea, fishing days and hours at sea), fishing area, métier)

The definition of the reference fleet population follow the definition of Commission decision 2016/1251 *(any vessel registered on 31 december or which has fished at least one day in the year up to 31 december)* in order to have a comprehensive view of the fishing activity applied during the year.

The definition of all the fishing trips of the French fleet with their associated features *(dates, fishing area, gear and mesh size, total weight and value of landings by species)* is based on a cross-validation tool: SACROIS of the different available data *(fleet register, annual fishing activity calendars, logbooks, monthly declarative forms, sales note data, geolocalisation data)* aiming to provide the best possible fishing statistics data.

SACROIS *(http://sih.ifremer.fr/Description-des-donnees/Les-donnees-estimees/SACROIS)* is a validation tool for the fisheries statistics, aiming at cross-checking data from different declarative sources, as demanded in article 145 of the EU control Regulation (EC Reg. 404/2011). The application is crossing information, at the most disaggregated level, from the fishing fleet register, logbooks, monthly declarative forms, sales notes data, geolocalisation data and the scientific census of annual fishing activity calendars, in order to build a dataset compiling the most accurate and complete information for each individual fishing trip. The application verifies and controls the different sources of data, with the aim of displaying validated and qualified landings per species and effort data series. The application provides also several quality indicators and evaluates the completeness of the data flows.

A specific algorithm is included into SACROIS to estimate the value of landings based on sales note data available (sometimes directly deducted from them) or estimation of an average price. For some fleet segment, estimated price based on expert knowledges is also used.

SACROIS include also the allocation of a single metier to a fishing trip, based on the dominant landed specie (or group of species) in value, the vessel' activity calendar survey and eventually the gear *(see detailed methodology explained in 'Anonymous, DCF metier workshop report, 2018')*. The methodology to determine the dominant landed specie (or group of species) is based on the raw ordination of the landed species.

For French fleets for which the coverage and precision of their available declarative data *(basically SACROIS data)* is insufficient to meet the end-users data needs *(e.g. DCF requirements)*: 1/ complementary on-site sampling data could be collected *(catch assessment survey)* and-or 2/re-evaluation methodology *(on the basis on the annual fishing activity calendars survey)* could be applied, in order to calculate the reference fishing activity' estimates. The choice between one of these two methodologies is also based on the coverage and precision of the available declarative data.

Based on that, fishing capacity and activity' estimates could be calculated for the whole of the reference population *(French fleet register including small-scale fleets, except the Other Regions – more than 24m length vessels, see below)* and cover all the areas where French vessels are operated.

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

Two complementary data sets are collected.

Annual fishing activity survey is conducted by fishing observers yearly in France on the basis of preliminary documentation provided by available data *(fleet register, logbooks, monthly declarative forms, sales note data, geolocalisation data, on-site samplings data)*. It **covers the whole of the reference population** *(also vessels not cover by available data)* and takes place every year in the first month of the year on the previous year. Its aim is to characterize each year the inactivity or activity of all the vessels each month of the year and, in the latter case, the métiers practiced and the main fishing areas *(Berthou et al., 2008)* [5]. It is to be noticed that this procedure has the benefit to provide the metiers as given by the fisherman himself throughout the year on an exhaustive basis.

Such surveys provide, among others, input each year for the typological classifications of vessels by fleet and a description of their metiers which in return makes also possible the definition of sampling plans to structure the routine data collection actions in response to the EU-MAP technical decision. They are also particularly useful to provide information on the part of fishing activity not included in available declarative data (completeness check of the available declarative data) and constitute the basis, if necessary *(for the fleets who need it)*, to re-evaluate available fishing activity data estimates *(in case of incomplete data for example)*. They are also used to allocate metiers to each fishing trip. Finally, they are the exhaustive basis for doing estimation based on the on-site sampling data *(for the fleets where such data has to be collected)*.

This survey cover the whole of the French vessels (French fleet register including small-scale fleets) in all the supra-regions where French vessels operated.

Complementary on-site sampling of trips (catch assessment survey) is used to estimate fishing activity variables estimates of vessels for which the coverage and precision of their available declarative data are insufficient to meet the end-users needs. The sampling scheme is based on the frame survey (Activity survey) useful to optimise the strategy of the spatio-temporal on-site sampling plan. Fishing trips features, effort and catches and weekly activity calendar (effort) are sampled directly on-site, when the fishers come back to the harbour. The raising method is based on a post-stratification of the fishing trips and weekly calendar sampled and the use of the percentile bootstrap to estimate the precision. In 2019, this will be applied for vessels under 12m from Réunion, Mayotte, French Antilles and French Guiana *(other regions, less than 12 meters)*.

The coverage and precision of their available data will be however analysed regularly during the scope of the present working plan and alternative methodology could be applied, during the period in which the present working plan will be applied, if they are judged sufficient and reliable to estimate the transversal variables. In this case, they could be eventually re-evaluated on the basis of the exhaustive activity calendar survey.

5. Others

Derogation:

During the scope of the precedent national program, the calculation of the passive gears characteristics *(Number of nets/Length, Number of hooks, Number of lines, Number of pots/traps)* proved to be problematic and it has not been possible to derive these information since 2009 from declarative data (logbooks and monthly declarative forms). It is linked with the implementation of a new IT chain in 2009 which led to a less quality-controlled field to inform these data with the consequence of insufficient sub sample of declarative forms data with reliable gears characteristics information for estimating the indicators. During the scope of the present national program, two ways to improve the situation will be considered: 1) Improving the data capture software with a new frame of references aimed at controlling the relevant gear characteristics information with reliable upper and lower bounds. 2) Identifying reference measures of gear characteristics by metiers, zones, vessel-

[5] ICES CM 2008/K:12 "From fleet census to sampling schemes: an original collection of data on fishing activity for the assessment of the French fisheries." - Patrick BERTHOU, Olivier GUYADER, Emilie LEBLOND, Sébastien DEMANECHE, Fabienne DAURES, Claude MERRIEN, Patrick LESPAGNOL - HH.

length ... to be able to identify sub sample of trips with reliable data in order to estimate the total value and/or to assess a reference value. During the time of these actions, the calculation of the passive gears characteristics variables will not be feasible and derogations will be needed.

Data presentation:

Effort data on year N will be available for all segment and regions at two different stages:

A special data processing for stock assessment purpose, will be carried out in due time before stock assessment working groups, to allow experts to work with the "best" estimates available by the time of the working groups. So, a 1st procedure will provide estimates based on raw data from the different declarative forms, scaled to the known fishing activity of year N-1. They will be available to the scientific community on a quasi-real time basis (N+2 months) bearing the inherent risk of errors and incompleteness of working with unqualified and unvalidated data.

The official, qualified and validated effort data estimates on year N, with precision associated based on all the data available (including the different declarative forms and the data provided by the on-site samplings) scaled to the known fishing activity of year N will be available in June N+1.

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

No deviations from the WP in 2019.

Actions to avoid deviations.

In 2019, the collection of such estimates through the Annual fishing activity survey has been reinforced in order to cover a maximum of fleet segments.

In consequence, on the basis on these complementary data, it is possible in 2019 to estimate these variables for almost all segments. Details of the fleet segments where such estimates could be derived with the precision of the coverage rate achieved, is given in table 2A. Few remaining fleet segments remain where no estimates could be derived, but they represent very few vessels and if necessary these specific variables could be derived for them from other neighbouring fleet segments filled out. Details are given in Table 2A.

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.

No deviations

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

No deviations

TEXT BOX 2A: FISHING ACTIVITY VARIABLES DATA COLLECTION STRATEGY

SUPRA REGION: Others Regions, - 24-< 40 m, 40 m or larger – RFMO : IOTC

1. Data sources

The French fishing activity data are based on the following sources of information:

1. French fleet register (vessel characteristic (length overall, kilowatt, gross tonnage, age of the vessel), geographical indicator, total number of vessels).
2. Logbooks with a coverage of 100% transmitted by the fishing industry aiming to discriminate fishing activity and fishing research for schools.
3. Sales note data (total weight and value of landings by species) transmitted by professional organization.
4. Geolocalisation data (inc. VMS data) used to organize the sampling stratification and the correction of data entry of logbook data in the dedicated database.

The definition of the reference fleet population follows the definition of Commission decision 2016/1251 *(any vessel registered on 31 december or which has fished at least one day in the year up to 31 december)* in order to have a comprehensive view of the fishing activity applied during the year.

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

Selection of metiers to be samples

IRD is responsible for the whole collection of activity variables for the French tropical purse seine fishery (effort, landings and observer data). In the Indian Ocean, IRD has at least one representative of technical staff based in Victoria, backed by a support team based in Sète (France) which is responsible for overall coordination of activities and the consolidation and processing of the data. The coordination of activities between the various landing ports (Victoria, Antsiranana, Port Louis) is handled remotely and by regular support and inspection missions for that member of technical staff with responsibility for the Indian Ocean. Conventional assessments (length composition of catches by species) are then carried out in accordance with the standards laid down by IOTC applying a processing suite specifically adapted to the sampling procedures described below.

Target population and sampling units

The target population corresponds to all the fishing trips of all the French purse seiners landing in the main harbours, for the entire Indian Ocean. For landed catches, the sampling unit considered is the brine-freezing well (or tank) in which the tunas are stored frozen after having been caught. A typical well contains about 60-70 t of catch and French purse seiners have from 14 to 18 wells, storing a maximum of about 1,250 t. The whole vessel (i.e. all wells combined) have not been used as sampling units as the data required by IOTC need to be geo-referenced on a grid of squares of 1°. A typical purse seine fishing trip lasts 6-10 weeks spanning about 20-30 squares of 1° during a cruise.

The stratification between sampling units for landed catches is based on the fishing activity mode, i.e. fishing on free school on one part and fishing on fishing aggregation devices (FAD) on the other part. At the end of the trip, before starting the sampling, the sampling plan depending on the fishing period, fishing ground and fishing mode (free school versus FAD) is defined for the technicians on shore. The selection of wells to be sampled is achieved by cross-checking the logbook information and the well plan transmitted by the chief engineer of the crew.

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

NA

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

NA

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

Deployment of FADs are collected in logbooks and by observers on board (for 20% of fishing trips). The two sources of FAD deployment data are cross-checked and if necessary a corrective value is applied to logbook data to estimate the whole population of FAD deployed by the fleet at different time scales.

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

No deviation from the Work Plan methodology of the data collection strategy of fishing activity variables of the French tropical purse seine fishery in the Indian ocean.

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

No deviations from the WP in 2019.

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

No deviations from the WP in 2019.

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

No deviations from the WP in 2019.

(max 900 words per Region)

TEXT BOX 2A: FISHING ACTIVITY VARIABLES DATA COLLECTION STRATEGY

SUPRA REGION: Others Regions, - 24-< 40 m, 40 m or larger - RFMO: ICCAT

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

The French fishing activity data are based on the following sources of information:

1. French fleet register (vessel characteristic (length overall, kilowatt, gross tonnage, age of the vessel), geographical indicator, total number of vessels)
2. Logbooks with a coverage of 100% transmitted by the fishing industry aiming to discriminate fishing activity and fishing research for schools
3. Sales note data (total weight and value of landings by species) transmitted by professional organization
4. Geolocalisation data (inc. VMS data) used to organize the sampling stratification and the correction of data entry of logbook data in the dedicated database.

The definition of the reference fleet population follows the definition of Commission decision 2016/1251 (any vessel registered on 31 december or which has fished at least one day in the year up to 31 december) in order to have a comprehensive view of the fishing activity applied during the year.

Selection of metiers to be samples

IRD is responsible for the whole collection of activity variables for the French tropical purse seine fishery (effort, landings and observer data). In the Atlantic ocean, the IRD has a representative of technical staff based in Abidjan, backed by a support team in France, in Sète, responsible for the overall coordination of activities plus the consolidation and processing of the data. The local survey team is administratively managed by a service provider on field. The coordination of activities between the various ports (Abidjan, Dakar, Tema) is handled by the IRD technician based in Abidjan.

Conventional assessments (catches by species) are then carried out in accordance with the standards laid down by ICCAT applying a processing suite specifically adapted to the sampling procedures described in the Text Box 4A.

Target population and sampling units

Purse seine fishery: The target population corresponds to all the fishing trips of all the French purse seiners landing in the main harbours, for the south eastern part of the Atlantic ocean. For landed catches, the sampling unit considered is the brine-freezing well (or tank) in which the tunas are stored frozen after having been caught. A typical well contains about 60-70 t of catch and French purse seiners have from 14 to 18 wells, storing a maximum of about 1,250 t. The whole vessel (i.e. all wells combined) have not been used as sampling units as the data required by ICCAT need to be geo-referenced on a grid of squares of 1°. A typical purse seine fishing trip lasts 6-10 weeks spanning about 20-30 squares of 1° during a cruise.

The stratification between sampling units for landed catches is based on the fishing activity mode, i.e. fishing on free school on one part and fishing on fishing aggregation devices (FAD) on the other part. At the end of the trip, before starting the sampling, the sampling plan depending on the fishing period, fishing ground and fishing mode (free school versus FAD) is defined for the technicians on shore. The selection of wells to be sampled is achieved by cross-checking the logbook information and the well plan transmitted by the chief engineer of the crew.

Pole and lines: For this metier, the target population is all the fishing trips of the entire French bait boats landing in Dakar only. All landings are monitored and for the species composition the frame population is a sample of unloading days.

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

NA

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

NA

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

Deployment of FADs are collected in logbooks and by observers on board (for 20% of fishing trips). The two sources of FAD deployment data are cross-checked and if necessary a corrective value is applied to logbook data to estimate the whole population of FAD deployed by the fleet at different time scales.

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

No deviation from the Work Plan methodology of the data collection strategy of fishing activity variables of the French tropical purse seine and pole and line fisheries in the Atlantic ocean.

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

No deviations from the WP in 2019.

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

No deviations from the WP in 2019.

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

No deviations from the WP in 2019.

(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

Table 3A was tailored to be coherent with table 2A slight evolutions (cf. general comments of text box 2A), hence leading to slight deviations when compared to the WP.

Supra region NAO

1 & 2. Description of methodologies used to choose the different sources of data and the different types of data collection

The procedure that is used to collect economic data for fisheries has recently been certified for its public interest and statistical quality. Data will be produced by SSP, which is the Ministry of Agriculture statistical service. The procedure relies on two partners who carry out different but complementary methodologies:
- The Laboratoire d'Economie et de Management de l'Université de Nantes (LEMNA) collects economic data for vessels belonging to firms that keep usable accounts (i.e. firms that own several ships and have established an internal bookkeeping procedure). Additional data (i.e. data that is not available in the accounts) is collected by having all partners fill in an input mask.
- The Institut Français pour l'exploitation de la mer (IFREMER) carries out field surveys each year to collect data for ships that do not belong to firms that keep usable accounts. Face-to-face meetings with fishermen make it possible to fill in a questionnaire and collect social and economic data, as well as activity, fishing effort, and production data (see text-box 2)

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

For more-than-40-meter-long Atlantic trawlers, no sampling is performed. Exhaustive aggregated data is supplied by the firm (PriceWaterhouseCoopers) which keeps accounts on behalf of the ship-owners.
Sampling frames are built for Mediterranean ships - including those of Corsica - and for less-than-40-meter-long Atlantic ships. They include all active ships that have not changed owner during the course of the year. Monthly activity data (fishing gears, target species, fishing areas) make it possible to build fleet segmentation.
A sampling target (number of ships to survey) for each fleet segment is computed in two steps. First, a precision target, correlated to turnover, is set for each fleet segment. Second, Neyman allocations are used to compute optimal sampling targets.
A list of target ships (i.e. ships be surveyed) is then obtained by a random draw within each sampling frame.

4. Description of methodologies used for estimation procedures

We expect some of the target ships to be impossible to survey. We estimate social and economic variables for these ships using logistic regressions. Explanatory variables in these regressions include data collection scheme (field survey or accounting data), place of registration, ship length, number of active months, and main type of fishing gear.
Cost variables and gross value of landing are then extrapolated, using weights adjusted to take into account the number of target ships that could not be surveyed and the total number of ships in each fleet segment.
Economic data about subsidies, investments, financial position, and other income are only available through accounts (and not through surveys). These variables can therefore only be estimated for some fleet segments.
Capital cost and capital value variables are computed using the PIM methodology, which cross-checks data from different data sources.
Employment variables are computed using an exhaustive data base based on economic and activity surveys.
Quota or other fishing rights cannot be leased or rented by individual fishermen in France, the associated variables (income, cost, value) are therefore not applicable to France. Unpaid labour at sea is not applicable either.

Social variables (employment by age, by gender and nationality) are computed using administrative files at national level. Education level are not available in this source.

5. Description of methodologies used on data quality

Consistency checks on individual data are routinely carried out by both Ifremer and LEMNA. Summary indicators are computed, and individual ship data is compared to mean values in the fleet segment and to values obtained in former years. Abnormal values are then corrected.

Supra region MBS

1 & 2. Description of methodologies used to choose the different sources of data and the different types of data collection

The procedure that is used to collect economic data for fisheries has recently been certified for its public interest and statistical quality. Data will be produced by SSP, which is the Ministry of Agriculture statistical service. The procedure relies on two partners who carry out different but complementary methodologies:
- The Laboratoire d'Economie et de Management de l'Université de Nantes (LEMNA) collects economic data for vessels belonging to firms that keep usable accounts (i.e. firms that own several ships and have established an internal bookkeeping procedure). Additional data (i.e. data that is not available in the accounts) is collected by having all partners fill in an input mask.
- The Institut Français pour l'exploitation de la mer (IFREMER) carries out field surveys each year to collect data for ships that do not belong to firms that keep usable accounts. Face-to-face meetings with fishermen make it possible to fill in a questionnaire and collect social and economic data, as well as activity, fishing effort, and production data (see text-box 2)

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

For more-than-40-meter-long Atlantic trawlers, no sampling is performed. Exhaustive aggregated data is supplied by the firm (PriceWaterhouseCoopers) which keeps accounts on behalf of the ship-owners.
Sampling frames are built for Mediterranean ships - including those of Corsica - and for less-than-40-meter-long Atlantic ships. They include all active ships that have not changed owner during the course of the year. Monthly activity data (fishing gears, target species, fishing areas) make it possible to build fleet segmentation.
A sampling target (number of ships to survey) for each fleet segment is computed in two steps. First, a precision target, correlated to turnover, is set for each fleet segment. Second, Neyman allocations are used to compute optimal sampling targets.
A list of target ships (i.e. ships be surveyed) is then obtained by a random draw within each sampling frame.

4. Description of methodologies used for estimation procedures

We expect some of the target ships to be impossible to survey. We estimate social and economic variables for these ships using logistic regressions. Explanatory variables in these regressions include data collection scheme (field survey or accounting data), place of registration, ship length, number of active months, and main type of fishing gear.
Cost variables and gross value of landing are then extrapolated, using weights adjusted to take into account the number of target ships that could not be surveyed and the total number of ships in each fleet segment.
Economic data about subsidies, investments, financial position, and other income are only available through accounts (and not through surveys). These variables can therefore only be estimated for some fleet segments.
Capital cost and capital value variables are computed using the PIM methodology, which cross-checks data from different data sources.
Employment variables are computed using an exhaustive data base based on economic and activity surveys.
Quota or other fishing rights cannot be leased or rented by individual fishermen in France, the associated variables (income, cost, value) are therefore not applicable to France. Unpaid labour at sea is not applicable either.

Social variables (employment by age, by gender and nationality) are computed using administrative files at national level. Education level are not available in this source.

5. Description of methodologies used on data quality

Consistency checks on individual data are routinely carried out by both Ifremer and LEMNA. Summary indicators are computed, and individual ship data is compared to mean values in the fleet segment and to values obtained in former years. Abnormal values are then corrected.

Supra region Other regions

1 & 2. Description of methodologies used to choose the different sources of data and the different types of data collection
The Economic data collection in Other Regions is shared between the two partners as follow:

- LEMNA: vessels using hooks more than 12 meters in the La Reunion island, and Purse seiners more than 40 meters targeting tuna, by using the same collecting methodology as the other fleet segments. The LEMNA uses the same method as for the other supra-regions namely the accounting source and will seek to extend its collect to 10-12m in Reunion island and 18-24m in French Guiana.
- IFREMER: vessels less than 12 meters in the French West indies (all vessels in Guadeloupe were covered and 90% in French Guyana).

Before 2018, no data were transmitted to any end-users for fleet segments less than 12 meters in French other regions. Ifremer tested a new methodology in 2018. The context of the French outermost regions is characterized by small scale fleets with one day trips, direct sales to consumers and no bookkeeping. Previous attempts showed that it was not possible to establish a yearly economic data survey (as it is done on the other supra-regions). It is impossible to collect some variables at annual level with high quality and reliability using a questionnaire. Most fishers do not know for instance income from landings, variable costs and this is reinforced by the fact that they do not have either bookkeeping or personal forms to register this informations. Ifremer tested a statistical approach to estimate economic yearly indicators by using the following complementary data sources:

- Fishing Activity survey: annual; census; individual data on monthly fishing activities (days at sea, gears, targeted species, areas…);
- Gear characteristics and dimensions: annual; sample; individual data on gears: type, number, dimensions used for estimation of gear costs;
- Fuel consumption data: annual; census; individual data on vessel fuel consumption used for estimation of fuel consumption and fuel costs. Fuel consumption is also used to estimate vessel effort (number of days at sea) per gear;
- On-site samplings: yearly collection at trip level; sample; Data on landings by days at sea, fleet, metier, species), effort (by fleet, metier), other variable costs (by days at sea, fleet, metier), prices by species;
- Socioeconomic survey: every four/five years; sample; individual data on other fixed costs, repair and maintenance costs, crew share, etc.
- Local economic data: annual; data on landings costs, prices for fuel, oil, bait, vessels-equipement and gears prices collected through ship chandlers.

The combination of these data sources make possible the estimation of socioeconomic variables at fleet-segment level based on a statistical approach. All those data sources are collected each year except for the socioeonomic survey which is implemented periodically (every 4-5 years)

For instance, income from landings will be estimated based on:
- average landings collected by days at sea by species, by metier and by fleet segment collected
- number of days at sea by metier and by fleet segment
- prices by species and by metier.

For more details, see Guyader et al, 2016. Proposition d'implication de l'Ifremer dans les différents volets de la DCF 2017-2020. Faisabilité et méthodologies de calcul des indicateurs économiques pour les flottilles de pêche dans les Départements d'Outre-Mer, Guadeloupe – Martinique - Guyane – La Réunion, Rapport Ifremer 20 p.
Data regarding fishing rights and unpaid labour: not applicable in France.
Financial position variables (long/short debt, total assets): not applicable for vessels less than 12 meters in French other regions because of the lack of bookkeeping.
In order to estimate capital costs and value, we tested the PIM method in 2017 and update data are provided each year.
Other income and subsidies (operating and investments): not applicable.

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

In 2018, the population shall be all active and inactive vessels registered in the Union Fishing Fleet Register as defined in Commission Regulation (EC) No 26/2004 (2) 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.

9. Deviations from Work Plan methodology used for estimation procedures

For Other-Regions, PWC also continued supplying complete data for the tropical seiner segment, with the exception of the five seiners of Mayotte for which we make estimates. Economic data have been provided by Ifremer for small scale fleets in French Guyana and Guadeloupe for 2016. These economic indicators are estimated. These data are just since 2016.

Comments have been added when “Achieved Sample no/Planned sample no.” is lower than 90%. Usually, this rate is lower than 85% because of the very small size of the frame population.

For social variables, employment data were given by gender, by age and by nationality at fleet segment level (not national level as required), because data at this level were avaiblable.

10. Quality assurance

10.1 Sound methodology

See table 5B.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3A. Documentation concerning errors measured and documented will be written.

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

10.3. Accessibility and Clarity

Indicate with Yes or No

Are methodological documents publicly available?

Yes

Are data stored in databases?

Yes

Where can methodological and other documentation be found?

On the CNIS (National Council of Statistical Information) website.

Provide the web link, if documentation is publicly available

https://www.cnis.fr/enquetes/production-de-donnees-economiques-secteur-peches-maritimes-enquete/?producer=475

SECTION 3: ECONOMIC AND SOCIAL DATA

PILOT STUDY 3: DATA ON EMPLOYMENT BY EDUCATION LEVEL AND NATIONALITY

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

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

1. Aim of pilot study

Social data on fisheries allow the evaluation of the social performance of the fisheries sector.

Data on employment by level of education and nationality can be collected on the basis of pilot studies.

2. Duration of pilot study

Social data are collected every three years starting in 2018.

2. Methodology and expected outcomes of pilot study

About employment by nationality, we collected data from administrative files at the fleet segment level, because it is exhaustive.

Outcomes were given to the social meeting.

About employment by level of education, data are not available, only population census data, so at national level, not fleet segment level. Outcomes have not been reported because sociologists wanted data at a more detailed level.

(max 900 words)

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

Original expected outcomes of pilot study were achieved. Sociologists wanted data at a more detailed level, which was not required in the EUMap. The national level is sufficient. The French authorities further support the Commission's decision.

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

Results will be incorporated into regular sampling, every 3 years as required by the multiannual Union programme.

(max 900 words)

TEXT BOX 3B: POPULATION SEGMENTS FOR COLLECTION OF ECONOMIC AND SOCIAL DATA FOR AQUACULTURE

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

Data collection will combine two information sources, one of census type and the other by non-probabilistic sampling:

- an exhaustive national annual survey (A-type) will allow to collect data on production (volume and value) and employment.
- accounting and extra-accounting data will be collected from a non-probabilistic sampling of enterprises (C-type). Data will be collected from chartered accountant centers, specialized in the aquaculture sector, on the basis of the enterprise financial accounts and of a supplementary survey.

The population of reference comprises:

- enterprises whose main activity is classified as aquaculture under NACE code 03.21 (marine aquaculture) or 03.22 (freshwater aquaculture);
- enterprises holding concessions for areas in the public maritime domain (Domaine public maritime - DPM) used for the farming of fish and shellfish;
- enterprises with premises holding public health certification for the cleansing or shipment of live shellfish;
- enterprises carrying on fish farming certified with regard to diseases legally designated as infectious or contagious (VHS, IHN, ISA) where such farming is the main activity.

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

The information sources described below are used to provide the segmentation of the target population of enterprises and to calculate the economic indicators for each selected segment.

Production exhaustive survey

Data on production volumes have been collected since 1997 by means of an exhaustive postal survey of firms. Council Regulation (EC) no. 788/96 on the submission of statistics on aquaculture was replaced in July 2008 by Regulation (EC) no. 762/2008 of the European Parliament and of the Council, applicable from 2009. This regulation increases the number of items of information and segments the activity by species and farming technique in a more detailed manner than before.

In 2009, the production surveys have been revised in order to meet the requirements of the new EC regulation no. 762/2008 and to include the information needed to start the new section on aquaculture activity in the DCF, for which the population segmentation is different.

The aquaculture industry comprises a large number of one-person businesses which are often difficult to identify in the official records. In order to build a list of such enterprises a range of databases must be examined:

- the SIRENE register of enterprises in sectors 03.21 or 03.22;
- the list of public health certificates issued for the shipment of live shellfish, the list of individual qualifications relating to infectious and contagious diseases maintained by the General Food Directorate at the Ministry of Agriculture and Fisheries;
- data relating to public domain (DPM) concessions and concession-holders maintained by the Directorate of Maritime Affairs (Direction des Affaires Maritimes – DAM).

The list of enterprises is drawn up each year using the previous survey, with input provided by examination of the databases listed above. Given the differences in identifiers in all these various sources, a single identifier is used specifically for this production survey.

The survey is carried out on an exhaustive basis by postal mail and provides for two reminder letters and a partial reminder program by telephone. Different questionnaires are used according to the type of aquaculture: saltwater shellfish farming, saltwater fish farming, freshwater fish farming.

Since 2009, the production survey is providing the following data:

- list of enterprises covered by the DCF, with information on their main farming techniques for each species, this being necessary for the subsequent segmentation of the population of reference in accordance with the category;
- establishment of data for sold production per species (in volume and value) and employment for each representative segment in the population of reference.

In 2018, France studied possible methods in order to collect the new social (table 6) and environmental variables (table 8). Experts and representatives of professionals had been involved in this work. Working groups met from September 2018 to December 2018 in order to discuss about the integration of the new social and environmental variables in surveys.

Following to working groups, the French Ministry of Agriculture and Food will launch two surveys in 2019:

- the annual aquaculture survey update in order to obtain the general interest and statistical quality label for the next 4 years (the previous label being valid until 2018)
- the decennial census of fish and seaweed aquaculture (the previous one took place in 2007-2008)

These two surveys integrate different questions allowing to respond to the news variables. The new social questions (employment by age, by education level, by nationality) will not be a problem in terms of analyse and interpretation contrary to environmental questions which are more sensitive (medecines or treatments administrated) or subject to some interpretation or subjectivity (mortalities). The last point is the object of the pilot study 4 (see below).

These two surveys will bring added information in order to evaluate the weight of all aquaculture segments in 2018 and in particular the segments where data are missing like “seaweeds” (micro or macro algae), other species reared in ponds and “other aquatic organisms”.

Accounting and extra-accounting data

Accounting and non-accounting data will be collected from a sample of enterprises belonging to the target population. They will be collected by the Nantes University, which will lead a network of partners including chartered accountant or financial management centers. Non-accounting data will be obtained from a supplementary survey, which will be validated annually in order to provide the required indicators. The definition and calculation method will be explained for the new variables such as number of hours by employees and unpaid labour.

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

On the basis of the results of the annual national exhaustive survey of aquaculture enterprises, the target population will be stratified according to the table 9. The stratification from year N-1 will be used to define the program of collection of economic data.

For shellfish farming and if possible freshwater fish farming, data collection will be made from a sample of enterprises selected from the files of accounting and financial data kept by chartered accountant or financial management centers specialised in these economic sectors. The planned sample rate is from 15 to 20%.

In accordance with the Commission Implementing Decision (EU) 2016/1251 of 12 July 2016 and in particular in the Chapter V concerning the thresholds, no data need to be collected on aquaculture for species accounting for less than 10 % of the Member State's aquaculture production by volume and value. In consequence, no data have been collected in 2018 for marine fish farming.

4. Description of methodologies used for estimation procedures

As regards the annual production exhaustive survey, the response rate is around 80%, with a higher rate from companies than from one-person businesses. The activity of non-responding firms is estimated by two means:

- a missing reply is replaced by a random drawing among answers received from the same geographic region belonging to enterprises with the same legal status;

- from the answers in year N-1 and N for the same enterprises, the evolution of production per species is calculated by region and legal status. The evolution is then applied to the result by region / legal status in year N-1 to estimate the production in year N.

The comparison of these two estimations indicates a good reliability when the difference is low.

Economic data collected from a sample of enterprises can also include data on production, at least the value of sales, possibly employment data. It will therefore be possible to compare data obtained from both sources. The representativeness of samples will be measured by segment by comparing the mean and distribution in the sample with data obtained from the exhaustive survey.

Economic indicators derived from sampling will be calculated for each segment by using «Horvitz-Thompson » estimators.

5. Description of methodologies used on data quality

Production exhaustive survey: returns are sorted by checking the validity of the responses in relation to the primary information (location, activity or known farming capacity) in addition to internal consistency (quantities produced in relation to areas worked and numbers of employees).

Collection of accounting and non-accounting data: quality control will be made during the data collection process and on the results of estimation. Procedures of quality control and data validation include:

- Test of consistency: Cross-validation of information from tax files and sales data.
- Test of homogeneity: There may be atypical values for various reasons in some enterprises. The homogeneity test allows to identify indicators significantly different from the average value in the segment.
- Test of continuity: Each year, gaps between observed values and “theoretical” values based on previous tendencies will also allow to detect anomalies, with reference to a pre-determined threshold.

Special comment:

Due to the lack of definition concerning the allocation of the firms in the different segments (“Tanks and Raceways”, “Recirculation systems”) of “Trout”, France has defined a segmentation criterion. The production of trout in “Tanks and Raceways” is predominant in France but many farms hold “Recirculation systems ». Taking into account the ratio [Volume of "Recirculation systems"> = Volume "Tanks and Raceways"] to classify a firm in the "Recirculation systems" segment, less than 10 were in this segment, hence a very significant risk of not be able to collect data from these companies. It was therefore decided to allocate all French trout firms in the "Tanks and Raceways" segment for the annual data in 2017 and 2018.

(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

For the first time in 2019, after consultation and agreement of shellfish hatcheries and nurseries national trade union, France collected 2017 and 2018 data of “Hatcheries and nurseries” oyster segments. Due to the low number of shellfish farmers in this segment and the sector concentration, data will be collected during several years in order to assess their quality.

In addition, the sampling plan provided for less request of the small shellfish farmers which are numerous. The accountants' returns were in line with the sampling plan, with fewer responses from small structures for this year and more for rarer segments. However, to ensure continuity with the previous periods, France accepted response rates of more than 100% for certain segments in order to reward the usual respondents to the survey so as not to lose them.

Actions to avoid deviations.

9. Deviations from Work Plan methodology used for estimation procedures

.

10. Quality assurance

10.1 Sound methodology

Collection of accounting and non-accounting data: The University of Nantes has written internal methodological guides for the "shellfish farming" and "fish farming" expert groups. These guides are for internal use.

Production exhaustive survey: data collection follows methodologies documented in guides (internal use).

10.2. Accuracy and reliability

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

Documentation concerning errors measured and documented will be written

10.3. Accessibility and Clarity

Indicate with Yes or No

Are methodological documents publicly available?

No

Are data stored in databases?

Yes

Where can methodological and other documentation be found?

Provide the web link, if documentation is publicly available

Technical reports available on demand

SECTION 3: ECONOMIC AND SOCIAL DATA

PILOT STUDY 4: ENVIRONMENTAL DATA ON AQUACULTURE

1. Aim of pilot study

Regulation (EC) No 852/2004 and Directive 2006/88/EC are applied and production sites record medicine use and mortalities in the rearing register of producers. There is no centralization of these data from the establishments. Adding questions for these variables to the current production survey will probably not be welcomed by enterprises and response rate may be reduced.

An approach with the French ministry for agriculture and food cares has been implemented in 2018 in order to evaluate the feasibility of collecting environmental data on aquaculture.

2. Duration of pilot study

The work on the surveys has begun in 2018 with exchange in working groups. This work resulted in additional questions in decennial census of fish and seaweed aquaculture and in shellfish farming annual survey in order to collect environmental variables for year 2018. The responses will be available at the end of June 2019. The treatment and the data results will be available at the end of 2019.

3. Methodology and expected outcomes of pilot study

- Concerning the shellfish farming annual survey, there are no medicines or treatments administered by shellfish farmer because of the production in marine open area. That's why no question has been integrated in the survey. Concerning the mortalities variable, in accordance with Council Directive 2006/88/EC (OJ L 328, 24.11.2006), Article 8, Paragraph 1(b), aquaculture production businesses keep a record of (1) all movements of aquaculture animals and products thereof into and out of the farm or mollusc farming area; (2) the mortality in each epidemiological unit as relevant for the type of production. Nevertheless, the record are not aggregated at the national level and no one computerised data are usable. That's why, via the survey 2018, shellfish farmer has to declare the losses in weight of adult sold shellfish (by specie). The mortalities of shellfish seeds and on-growing shellfish are not included in the survey because of a lack of knowledge of the stock level (volume) on the leaseholds.
- Concerning the decennial census of fish and seaweed aquaculture, some questions are requested on the medicines or treatments administrated. Three categories have been identified: the chemical treatment products (hydrogen peroxide, copper sulphate, etc.), antibiotic (Oxolinic acid, flumequine, florfenicol, etc.) and vaccine (against Yersiniosis agent, furunculosis, vibriosis, etc.). For each category, fish farmers must indicate the unity (gram, ml, etc.). Depending of the results and if it is possible (realistic?), France will propose conversion indices in order to respond to the requirement of the regulation (in gram). Concerning the mortalities variable, for each size and each specie, the losses weight (kg) are requested. These results will be completed with the statistical database of removal order to rendering companies available at FranceAgrimer.

(max 900 words)

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

The expected outcomes are achieved. France is being analysed data in order to check their coherence and relevance.

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

The objective for France is to integrate these questions in the national survey every 3 years to respond to the Regulation.

SECTION 3: ECONOMIC AND SOCIAL DATA

TEXT BOX 3C: POPULATION SEGMENTS FOR COLLECTION OF ECONOMIC AND SOCIAL DATA FOR THE PROCESSING INDUSTRY

Table 3 C was adjusted compared to the WP to take care of the segmentation as recommended by the guidelines i.e. Companies <= 10 ; Companies 11-49 ; Companies 50-250 ; Companies > 250

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

Through the checking of companies registered under NACE code “10.20Z “and professional press, available financial accounts for 2017 (specific websites and DIANE database) were collected and analyzed in order to complement the social-economic database (for example when no answer was previously received to the survey for a company). Data was mainly collected through questionnaires sent to the companies.

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

Basic and clear variables available are chosen in the annual statements of income and balance sheets of processing companies. The correspondence with the official national accounting classification codes is established. Data were collected through a survey. A standardized questionnaire was sent to each company identified (census methodology). Replies must be given within three months. Two reminders (by e-mail and telephone) were held in order to maximize the response rate.

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

The survey started with an update of the list of companies involved in FAP processing activities in 2018 (see details in point 1 above), registered in France. According to the definition of the scope in the current DCF Regulation, the existing relevant population list was updated and limited to all enterprises whose main activity is defined according to the EUROSTAT definition under NACE code 10.20:”products”; “Processing and preserving of fish, crustaceans and molluscs”.

However, data were collected for companies involved in FAP processing, as a secondary activity, whether they are registered under “4638A” NACE rev 2 code (Wholesale (intercompany trade) of fish, crustaceans and molluscs). Data collected for those companies that are considered out of scope were not included in table 3C.

A cross-checking of the DCF database with professional press allowed to list new companies that should be added to the sampling. When changes were identified, the information available were modified: withdrawal of companies (cessation of activity or only FAP processing activity), inclusion of new companies. Specific investigations were also led in order to clarify the activity and the size of companies registered under the NACE code “10.20Z “and which did not published any economic data until now. Some companies registered under the NACE code “10.20Z “, processing snails or being only involved in the marketing of processed seafood and companies not implicated in FAP processing were considered out of the scope.

4. Description of methodologies used for estimation procedures

The estimation of missing data are optimized by stratifying the reference population to apply the best suited estimates to lacking enterprises[1], taking into account the disparity of economic performances within the sector. Stratification is based on the size of the enterprises (large companies, mid-sized companies, SME, micro-companies), the technology and the range of processed products of the enterprises: the companies are dispatched in activity groups. The figures for missing companies were obtained by applying to them the average of the stratum. Each variable of a missing company[1] was estimated by applying the average growth rate 2017-2018 of the corresponding stratum (activity, size) to the value of this variable collected in 2017.

[1] Enterprises for which no data were collected through questionnaires or financial accounts

5. Description of methodologies used on data quality

With the help of a detailed and complete questionnaire sent to companies, data can be as close as possible to economic reality for this sector.

(max 1000 words)

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

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

List the deviations (if any) from the methodologies to choose type of data collecton scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.

Actions to avoid deviations

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

No deviations

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

List the deviations (if any) from the methodologies used regarding sampling frame and allocation scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.

Actions to avoid deviations

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

No deviations

9. Deviations from Work Plan methodology used for estimation procedures

List the deviations (if any) from the methodologies used for estimation procedures compared to what was planned in the Work Plan, and explain the reasons for the deviations.

Actions to avoid deviations

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

10. Quality assurance

10.1 Sound methodology

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

Data is collected under a public contract. Methodology cannot be changed until the contract is over. When the contract is over (2020) France will stop collecting data since it is not compulsory.

10.2. Accuracy and reliability

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

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

The informations collected through questionnaires are cross-checked with others data sources (for example, from financial accounts) and with key informants like association of processing companies or fish merchants' association ("Association Des Entreprises de Produits ALimentaires Elaborés", "Union du Mareyage Français").

10.3. Accessibility and Clarity

Indicate with Yes or No:

Are methodological documents publicly available?

No

Are data stored in databases?

Yes

Where can methodological and other documentation be found?

Technical reports available on demand

Provide the web link, if documentation is publicly available.

(max 1000 words)

SECTION 4: SAMPLING STRATEGY FOR BIOLOGICAL DATA FROM COMMERCIAL FISHERIES

TEXT BOX 4A: SAMPLING PLAN DESCRIPTION FOR BIOLOGICAL DATA

Region: North Sea and Eastern Arctic

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

The biological data as referred in Chapter 3 (2) of the Commission Implementing Decision (EU) 2016/1251, may be divided into two main sources:

1. The fisheries independent data as collected through scientific surveys enables the collection of individual fish biological parameters such as age, weight, sex-ration and maturity in the population. The sampling plan is detailed in section 1.
2. The fisheries dependent data are collected through several sources:
   a. The at-sea sampling plan (sampling schemes: “At-sea sampling – ObsMer” and “DACOR”): estimation of volume of catches (all fractions) and their length structures. This sampling plan incorporate the activities related to the implementation of the recovery plan on Mediterranean swordfish
   b. The on-shore sampling plan (sampling schemes: “On-shore sampling - ObsVentes” and “Elasmobranches on shore”): estimation of length structures of the fractions landed, and collection of calcified pieces for ageing.
   c. Fish buying from the market for collection of individual fish biological parameters such as age, weight, sex-ration and maturity in the catches (cf section 1).

For the purpose of this section, only the points 2.a and 2.b will be detailed here, they represent the vast majority of the collected data.

The primary sampling units are the vessel*trip for onboard sampling and the port*day for the on-shore sampling. For any trip sampled the general rule is the use of concurrent sampling both at sea and at auction. Concurrent sampling on board professional fishing vessels involves firstly an estimation of the weights of all commercial species, and their measurement, both on discarded and retained fractions, for about 30-40% of the total number of hauls. Concurrent sampling at fish auctions involves measuring all species of a restricted list determined by metier. All details were given at WKISCON[6] (annex 12).

To progress towards statistical sound sampling, several initiatives were taken in recent years. First a website dedicated to presenting and monitoring the sampling plan was put in place. This website monitors also all contacts taken with fishermen for sampling on-board their vessel, and thus makes it possible to infer refusal rates and their causes. Second, a reduction of sampling strata, to depart from metier based stratification. The plan proposed for 2017 is still extensive, but is a strong reduction of the previous sampling plan especially for auction sampling.. The third element of a statistically sound sampling is the constitution of lists of PSU per sampling strata and the further ability to randomly draw from these lists. For details see both sampling protocols available on the website (footnote 5 and 6).

The quality assurance which was developed made use of advanced controls in the data input tool (Allegro, see input protocols on the websites), and multi level validation before being transferred in the database Harmonie. Note that most of the french validation functions were transcripted in the fishPi project (MARE/2014/19).

For data processing and answering the multitude of datacalls, a specific organisation has been put in place in 2013, making use of the COST library, a dedicated supervisor, an engineer and all experts in stock assessment helping on the built-up and validation of the datasets for the expert groups. The first years were considered as learning years, and the full operationality of the process was effective in 2016, following the implementation of an action plan proposed to the EU in 2015 (EMFF ex-ante conditions).

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

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1. Results

As a general statement, to be authorized to embark an observer, the French fishing vessels must have an administrative authorization given by the security services. The number of vessels having this authorization is much lower than the total number of vessels in the strata. Moreover, this is general to all countries, the weather conditions may be acceptable for fishing practices but not for observation. These two imperatives largely reduce the sampling opportunities. Adding to this, changing of fishing practices during the sampling year, make it extremely difficult to follow strictly the sampling plan.

The general realization was 197 trips sampled at sea when the plan was 363, giving a realisation rate of 54% and 69 trips to auction were done vs 90 in the plan (realization of 76%).

2. Deviations from the Work Plan

The specific reasons for undersampling at-sea are the following for the strata with less than 90% of realization:

- M0024 (47%), M0025 (56%) and M0242 (79%): Trawlers <18m in VIId. These fleets have been attracted toward the lucrative scallop fishery, and thus disappeared from the sampling opportunities from January to March-April and October to December.
- M0026 (36%) : Trawlers >=18m in VIId (South). Target has been reallocated to 11 trips, so the actual realization rate is 91%.
- M0028 (82%) : Trawlers >=18m in VIId (North). Low number of vessels in the population, and reluctance to embark an observer make it difficult to achieve the target.
- M0050 (58%): Beam trawlers in VIId. As trawlers <18m, vessels shifted to the scallop fishery in the first quarter. Otherwise, the vessels are predominantly operating with a bottom trawl, which makes it difficult for an observer to embark on the very trips operating with a beam trawl.
- M0215 (37%) and M0216 (42%), : Gillnetters in VIId (South).Vessels moved to pots and traps because of difficulties to catch sole.
- M0217 (18%): Gillnetters in VIId (North). Fleet depleted with the difficulties to catch sole and reluctance to embark an observer due to their upset of the situation with the targeted species.
- M0277 (167%) and M0278 (0%): Trawlers targeting brown shrimp. Strata merged resulting in a realisation of 15 trips vs 19 in the plan (79%). Bad weather was mostly invoked for the non realisation of the objectives.

Regarding on-shore sampling, the following strata had a realization rate <90%:

- V0351 (56%): Boulogne and Dunkerque (gillnetters). Like the corresponding strata for at-sea observation, the strata suffered the decrease in catches of sole in VIId.
- V0352 (83%): Port-en-Bessin and Cherbourg (offshore trawlers). A limited number of vessels are in this fishery, making it difficult to achieve the objectives.
- V0353 (75%: Boulogne, Fécamp, Dieppe (trawlers). Some opportunities were missed, and so were the objectives.
- V0354 (75%): Boulogne, Fécamp (Dredgers). One trip was missing to achieve the goal, due to a trip to an auction resulting in 0 sample (difficulties to access the landings).
- V0506 (42%): Le Havre, Port-en-Bessin (gillnetters). Difficulties encountered for at-sea observations (fleet depletion, shift to pots and traps) have the same consequences on-shore.
- V0511 (0%) and V0512 (167%): All metiers targeting sea bass. Together the realisation rate for the two strata is 71% (5/7). Very scarce landings due to the sea bass regulation.

3. Action to avoid deviations

A steering committee with all sub-contractors takes place every quarter to adjust the strategy on a real time basis. Some stratas were merged to increase the sampling opportunities, meetings with the stakeholders and auction directors were held to increase awareness of the programme. Targeted actions were conducted by the sub-contractor on auctions and local fishery committee in order to improve accessibility and acceptance of the programme.

Several initiatives were launched to improve both sampling programmes at-sea and on-shore, and will continue in the future. These are mainly based on communication with industry and stakeholders, organisation of meetings, production of leaflets (at-sea, on-shore and generic) and sending of documents and letters to explain the sampling objectives and the reasons for sampling fishing activities.

A full resetting of the sampling plan is about to be implemented from mid-2020 onwards, in order to progress towards S4 sampling and facilitate the work of the samplers on the field (e.g. more random, less prescription, more flexibility, less ambiguity in defining strata, …). As part of the communication effort, a special media event will be organised, probably in 2021, for the 10-years of the at-sea sampling. Moreover, an annual lottery and goodies will be entirely part of the at-sea sampling programme for those crews accepting an observer.

SECTION 4: SAMPLING STRATEGY FOR BIOLOGICAL DATA FROM COMMERCIAL FISHERIES

TEXT BOX 4A: SAMPLING PLAN DESCRIPTION FOR BIOLOGICAL DATA

Region: North Atlantic

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

The biological data as referred in Chapter 3 (2) of the Commission Implementing Decision (EU) 2016/1251, may be divided into two main sources:

1. The fisheries independent data as collected through scientific surveys enables the collection of individual fish biological parameters such as age, weight, sex-ration and maturity in the population. The sampling plan is detailed in section 1.
2. The fisheries dependent data are collected through several sources:
    a. The at-sea sampling plan (sampling schemes: "At-sea sampling – ObsMer"): estimation of volume of catches (all fractions) and their length structures. This sampling plan incorporate the activities related to the implementation of the recovery plan on Mediterranean swordfish
    b. The on-shore sampling plan (sampling schemes: "On-shore sampling - ObsVentes" and "Elasmobranches on shore"): estimation of length structures of the fractions landed, and collection of calcified pieces for ageing.
    c. Fish purchase from the market for collection of individual fish biological parameters such as age, weight, sex-ration and maturity in the catches (cf section 1).

For the purpose of this section, only the points 2.a and 2.b will be detailed here, they represent the vast majority of the collected data.

The primary sampling units are the vessel*trip for onboard sampling and the port*day for the on-shore sampling. For any trip sampled the general rule is the use of concurrent sampling both at sea and at auction. Concurrent sampling on board professional fishing vessels involves firstly an estimation of the weights of all commercial species, and their measurement, both on discarded and retained fractions, for about 30-40% of the total number of hauls. Concurrent sampling at fish auctions involves measuring all species of a restricted list determined by metier. All details were given at WKISCON[7] (annex 12).

To progress towards statistical sound sampling, several initiatives were taken in recent years. First a website dedicated to presenting and monitoring the sampling plan was put in place. This website monitors also all contacts taken with fishermen for sampling on-board their vessel, and thus makes it possible to infer refusal rates and their causes. Second, a reduction of sampling strata, to depart from metier based stratification. The plan proposed for 2017 is still extensive, but is a strong reduction of the previous sampling plan especially for auction sampling.. The third element of a statistically sound sampling is the constitution of lists of PSU per sampling strata and the further ability to randomly draw from these lists. For details see both sampling protocols available on the website (footnote 5 and 6).

The quality assurance which was developed made use of advanced controls in the data input tool (Allegro, see input protocols on the websites), and multi level validation before being transferred in

[7]

the database Harmonie. Note that most of the french validation functions were transcripted in the fishPi project (MARE/2014/19).

For data processing and answering the multitude of datacalls, a specific organisation has been put in place in 2013, making use of the COST library, a dedicated supervisor, an engineer and all experts in stock assessment helping on the built-up and validation of the datasets for the expert groups. The first years were considered as learning years, and the full operationality of the process was effective in 2016, following the implementation of an action plan proposed to the EU in 2015 (EMFF ex-ante conditions).

1. Results

The general realization was 483 trips sampled at sea when the plan was 655, giving a realisation rate of 74% and 487 trips to auction were done vs 655 in the plan. (realization of 74%).

2. Deviations from the Work Plan

The specific reasons for deviations from the at-sea sampling plan (ObsMer) areas follows:

- M0002 (25%): Offshore gillnetters (>18m). Stratum merged with M0021 (done at 97%) but the merged realization rate is thus 34/48 (71%). Few vessels are eligible to this stratum, and maximum effort has been deployed to realize the plan.
- M0006 (74%): Offshore otter trawlers in VII and VIII. Huge effort was needed to safeguard a good coverage amid high refusal rate and reluctance for embarking observer due to questioning about landing obligation and BREXIT.
- M0016 (42%) and M0018 (64%): Longliners in VIII. No major difficulties, except in the 4th quarter where the weather was very bad.
- M0019 (28%): Mid-water trawlers in VIII. The season for small pelagics started later, and impacted the realization of the first semester. Few vessels are eligible to this stratum.
- M0044 (44%): inshore trawlers in Northern Brittany. Vessels shifted to dredge, traps and pots. A lot of these (small) vessels do not have the administrative authorisation to embark an observer.
- M0110 (62%) and M0111 (70%): Nephrops Trawlers in South Brittany. Target was actually raised for M0111 in 2019. Lots of contacts agreed and further cancelled due to bad weather, gear shifting, and upset fishers due to poor fishing.
- M0112 (75%): Otter trawlers in South Brittany. Fleet shifting metiers regularly, so difficult to focus on the only ones targeting demersal fish.
- M0115 (15%): Otter trawlers on the Atlantic littoral. The 7 trips sampled are in Q1, since the stratum was merged with M0111 thereafter.
- M0220 (44%): Inshore Gillnetters. context difficult – high refusal rates. Vessels shifting metiers very often. A lot of these (small) vessels do not have the administrative authorisation to embark an observer.
- M0221 (50%): Inshore Gillnetters. context difficult – high refusal rates. A lot of these (small) vessels do not have the administrative authorisation to embark an observer. The actual target was reduced to 39 which gives an actual realisation rate of 62%. The end of the 2019 year (September to December) proved difficult to sample due mainly to bad weather and gear shifting.
- M0223 (70%): Large longliners in VI and VII operating outside mainland France. Difficulty to start the season and quite successful in the second half of 2019 (5/5). This is a critical and important fishery to sample. A lot of efforts have been dedicated to make this happen, so 70% of the target is seen as a very good achievement.
- M1004 (25%): Danish seiners. Context difficult with very few vessels and acceptability of the program very low.

- M1003 (20%): All vessels with length >15m operating from Southern Brittany and Basque country and targeting bluefin tuna .Target was reduced to 1 trip.
- M2003 (0%): All vessels operating from Southern Brittany and Basque country targeting large pelagics. Special focus on bluefin tuna for Regulatory purpose. 1 trip planned could not be realised.

The specific reasons for deviations from the on-shore sampling plan (ObsVentes) are as follows:

- V0106 (67%): Potters in Northern Brittany. Target reduced to 16, so actual realization rate is 100%.
- V0119 (0%): Mid-water trawlers targeting small pelagics in the Basque country. Vessels targeting small pelagics landed in Spain. Stratum deleted in 2019.
- V0122 (67%): Purse seiners in Southern Brittany. Opportunistic sampling (sampling sardine during any trip to auction). Low number of vessels eligible to this stratum encountered in sampling sites.
- V0123 (75%): Purse seiners in the Basque countryI. Low number of vessels eligible to this stratum.
- V0143 (80%) and V0149 (31%): Inshore and Offshore trawlers in La Cotinière auction. The principal auction for this stratum is one of the most difficult auction to access in France. A special action has been initiated to ease the sampling process. Results expected in 2019.
- V0183 (67%): Inshore gillnetters in La Cotinière, and les Sables d'Olonne. Target was reduced to 10 and all completed.
- V0332 (29%): Potters in Southern Brittany. Access conditions to crustaceans continue to be difficult.
- V0514 (83%): eel fishery in marine waters. Started mid-2018. The sampling went well and only short of one sample.
- V0606 (80%): mid-water trawlers targeting large pelagics in Lorient. Sampling opportunities reduced.
- ~~V0607 (133%): Mid-water trawlers targeting large pelagics Pays de Loire and Vendée auction. Extremely few fishing trips available for sampling.~~
- V0608 (89%): Mid-water trawlers targeting small pelagics Pays de Loire and Vendée auction. Only a planning issue at the end of the year prevented from completing the plan.
- V0609 (75%): Mid-water trawlers targeting large pelagics in Basque country. Extremely few fishing trips available for sampling, and a shortening of the season prevented from completing the plan.

3. Action to avoid deviations

A specific action was taken to sample franco-spanish offshore gillnetters (M0002) with success, but the situation remains unstable and under high scrutiny.

Several initiatives were launched to improve both sampling programmes at-sea and on-shore, and will continue in the future. These are mainly based on communication with industry and stakeholders, organisation of meetings, production of leaflets (at-sea, on-shore and generic) and sending of documents and letters to explain the sampling objectives and the reasons for sampling fishing activities.

A full resetting of the sampling plan is about to be implemented from mid-2020 onwards, in order to progress towards S4 sampling and facilitate the work of the samplers on the field (e.g. more random, less prescription, more flexibility, less ambiguity in defining strata, …). As part of the communication effort, a special media event will be organised, probably in 2021, for the 10-years of the at-sea sampling. Moreover, an annual lottery and goodies will be entirely part of the at-sea sampling programme for those crews accepting an observer.

TEXT BOX 4A: SAMPLING PLAN DESCRIPTION FOR BIOLOGICAL DATA

Region: Mediterranean Sea and Black Sea

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

The biological data as referred in Chapter 3 (2) of the Commission Implementing Decision (EU) 2016/1251, may be divided into two main sources:

3. The fisheries independent data as collected through scientific surveys enables the collection of individual fish biological parameters such as age, weight, sex-ration and maturity in the population. The sampling plan is detailed in section 1.
4. The fisheries dependent data are collected through several sources:
   a. The at-sea sampling plan (sampling schemes: “At-sea sampling – ObsMer” and “DACOR”): estimation of volume of catches (all fractions) and their length structures. This sampling plan incorporate the activities related to the implementation of the recovery plan on Mediterranean swordfish
   b. The on-shore sampling plan (sampling scheme: “On-shore sampling - ObsVentes”): estimation of length structures of the fractions landed, and collection of calcified pieces for ageing.
   c. Fish buying from the market for collection of individual fish biological parameters such as age, weight, sex-ration and maturity in the catches (cf section 1).

For the purpose of this section, only the points 2.a and 2.b will be detailed here, they represent the vast majority of the collected data.

The primary sampling units are the vessel*trip for onboard sampling and the port*day for the on-shore sampling. For any trip sampled the general rule is the use of concurrent sampling both at sea and at auction. Concurrent sampling on board professional fishing vessels involves firstly an estimation of the weights of all commercial species, and their measurement, both on discarded and retained fractions, for about 30-40% of the total number of hauls. Concurrent sampling at fish auctions involves measuring all species of a restricted list determined by metier. All details were given at WKISCON[8] (annex 12).

To progress towards statistical sound sampling, several initiatives were taken in recent years. First a website dedicated to presenting and monitoring the sampling plan was put in place. This website monitors also all contacts taken with fishermen for sampling on-board their vessel, and thus makes it possible to infer refusal rates and their causes. Second, a reduction of sampling strata, to depart from metier based stratification. The plan proposed for 2017 is still extensive, but is a strong reduction of the previous sampling plan especially for auction sampling.. The third element of a statistically sound sampling is the constitution of lists of PSU per sampling strata and the further ability to randomly draw from these lists. For details see both sampling protocols available on the website (footnote 5 and 6).

The quality assurance which was developed made use of advanced controls in the data input tool (Allegro, see input protocols on the websites), and multi level validation before being transferred in the database Harmonie. Note that most of the french validation functions were transcripted in the fishPi project (MARE/2014/19).

For data processing and answering the multitude of datacalls, a specific organisation has been put in place in 2013, making use of the COST library, a dedicated supervisor, an engineer and all experts in stock assessment helping on the built-up and validation of the datasets for the expert groups. The first years were considered as

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learning years, and the full operationality of the process was effective in 2016, following the implementation of an action plan proposed to the EU in 2015 (EMFF ex-ante conditions).

According to the requirements of the DACOR project, the at sea sampling carried out on Corsica since 2017 is focused on small-scale coastal fishing which is largely representative of the island fleet. This sampling plan is based on a minimum of 150 vessel trips per year distributed over all of Corsica's fishing ports. The study area is divided into 5 statistical states. The sampling plan takes account of the great diversity of fishing trades which characterises small-scale coastal fishing.

The DACOR sampling protocol is particularly adapted to small-scale coastal fishing while being compatible with the OBSMER protocol. It provides for the measurement of almost 100% of the catches landed and discarded during a fishing trip, according to fishing trades, fishing area, unit of effort, depth, etc.

Discards and by-catches are determined and classified in 11 categories in order to identify the individuals released alive and the dead discards : catches not commercialised, undersized, grained crustacean, degraded... The interactions with bottlenose dolphins are also taken into account (predation indices of bottlenose dolphins in fishing nets).

The sampling plan for Corsica is a deliverable of the DACOR project and will be disseminated on the partners' websites at the end of the project in September 2020 (the duration of the project has been extended by 3 months in the context of Covid 19).

The data collected are stored in the DACOR regional database set up by the Corsican Environment Office (Office de l'Environnement de la Corse). This database is compatible with the Harmonie Database and adapted to the COST format set up by IFREMER for responding to data calls.

1. Results

As a general statement, to be authorized to embark an observer, the French fishing vessels must have an administrative authorization given by the security services. The number of vessels having this authorization is much lower than the total number of vessels in the strata. Moreover, this is general to all countries, the weather conditions may be acceptable for fishing practices but not for observation. These two imperatives largely reduce the sampling opportunities. Adding to this, changing of fishing practices during the sampling year, make it extremely difficult to follow strictly the sampling plan. Under this context, the realization rate amounted to 90% for at-sea sampling and 92% for on-shore sampling.

It is to be noted that a new organisation (OEC) joined the French DCF partnership and took care of sampling at sea in Corsica (DACOR programme) with very good success.

The general realization was 277 trips sampled at sea when the plan was 261, giving a realisation rate of 106% and On-shore sampling was completed for 170 trips to auctions vs 215 on the plan, which gives a realization rate of 92%.

1. Deviation from the plan

In 2019, the sampling carried out for Corsica is higher than the number of trips initially planned because the monitoring was carried out as part of the DACOR project (2019 sampling plan: 150 PSUs per year). The specific reasons for some specific low results for on-board sampling are the following for the strata with less than 90% of realization:

- M0344 (84%): All trawlers targeting Demersal and small pelagics in GSA07. No major difficulties, except weather and limited number of vessels with security clearance preventing from attaining the goal.
- M0345 (14%): longlines targeting large pelagics. The main actor of the fishery never went to sea, since his vessels were sold and he was waiting for the new ones.

- M0346 (0%): longlines targeting swordfish. No opportunities to sample.
- M0347 (33%): Trolling lines and other lines for bluefin tuna. Target 2019 set at 2 and fully realized.

The specific reasons for some specific low results are the following for the strata with less than 90% of realization:

- V0910 (25%): all strata including trawlers targeting small pelagics have been merged in a single stratum, following the strong decline of this fishery in recent years. The completion of this sampling plan is still complex given the scarcity of small pelagics landings in the Gulf of Lion.
- V0944 (21%), V0949 (0%) and V0957 (8%): Purse seiners for small pelagics (Marseille, Sète, Port-Vendres respectively). Same reasons and same consequences as V0910.

3. Action to avoid deviations

In the Gulf of Lion, a steering committee with the sub-contractor is held every quarter to adjust the strategy on a real time basis. Some strata were merged to increase the sampling opportunities.

Several initiatives were launched to improve both sampling programmes at-sea and on-shore, and will continue in the future. These are mainly based on communication with industry and stakeholders, organisation of meetings, production of leaflets (at-sea, on-shore and generic) and sending of documents and letters to explain the sampling objectives and the reasons for sampling fishing activities.

A full resetting of the sampling plan is about to be implemented from mid-2020 onwards, in order to progress towards S4 sampling and facilitate the work of the samplers on the field (e.g. more random, less prescription, more flexibility, less ambiguity in defining strata, …). As part of the communication effort, a special media event will be organised, probably in 2021, for the 10-years of the at-sea sampling. Moreover, an annual lottery and goodies will be entirely part of the at-sea sampling programme for those crews accepting an observer.

SECTION 4: SAMPLING STRATEGY FOR BIOLOGICAL DATA FROM COMMERCIAL FISHERIES

TEXT BOX 4A: SAMPLING PLAN DESCRIPTION FOR BIOLOGICAL DATA

Region: Other region – Indian Ocean (IOTC)

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

Purse seiners

For landings the sampling is conducted in conjunction with France's partners in the countries where catches are landed and sampled. The partners involved in the Indian Ocean are:

- SFA (Seychelles Fisheries Authority, attached to the Ministry of Agriculture and Fisheries) in the Seychelles,

- USTA (Unité Statistique Thonière d'Antsiranana / Antsiranana tuna statistics unit, attached to Madagascar's Ministry of Fisheries Resources) if the level of catches in Madagascar justifies this,

- sometimes Albion Fisheries Research Centre in Mauritius (Port Louis).

Those sampling activities are homogeneous at the scale of the UE purse seine in the Indian ocean.

Methodologies applied are as follows:

In the case of tropical tuna fisheries, it is imperative to estimate the species composition of landings insofar as these are weighted according to commercial categories based more on length size than on species, which is a major source of bias. The catch for each species can be estimated by cross-correlation of information from fishing logbooks, VMS data and information about landings provided by the producer organisation, as well as from the sampling of species composition at the landing site. Sampling is carried out concurrently in port and then pooled for estimates of the length and species compositions of landings on the basis of predefined spatial and temporal strata, according to the type of association and the weight category of the individuals. This involves a minimum number of samples for each stratum and a predetermined population of individuals for each sample, which differs according to the fishing mode. Adherence to these procedures results in an important number of sampled and measured individuals, this arises from the fact that in order to achieve a reasonable level of precision for the estimation of the species composition necessary to examine a large number of individuals for each sample (500 for log sets, 200 for free school sets). When the number of samples is considered insufficient a substitution procedure follows ocean-based schemes which vary between size and species composition.

Reference: *Pianet R., P. Pallares and Ch. Petit, 2000. New sampling and data processing strategy for estimating the composition of catches by species and sizes in the European purse seine tropical tuna fisheries. IOTC-WPDCS/2000/10*

For Bycatch and discards: Discards of both target species (tunas) as priority and second bycatch are monitored by at-sea observers. Observations consist in counting, species composition, length measurements (and weighting when possible). The observer handles all the discards, and when not possible, a fraction of it that is raised at the level of the fishing set. In such cases, discarded fish are randomly sampled to be counted and measured. When possible the condition (dead or alive) of discarded fish is monitored.

Longliners

At-sea observers monitor the retained catch as well as the discards of both target (swordfish, tunas) and all bycatch species. Quantification (in numbers) of retained and discarded fish is exhaustive, as well as the condition at discard (dead or alive). Length measurements of retained and discarded fish are taken when possible. Depredation by cetaceans and sharks on target species is noted when it occurs. Within the framework of the observer scheme, self-reporting data are collected by fishermen themselves and consist of counting both the retained catch and discards, including the condition at discard and depredation. No measurements are done by fishermen.

Size frequencies of all landed species are sampled twice a month for longliners longer than 12 m. Since 2017, sampling is conducted for longliners smaller than 12 m ("mini-longliners") in an opportunistic way, corresponding to a frequency of once every two weeks. All size and weight measurements are taken for a sample of landed bigeye, yellowfin and albacore tuna. This includes straight and curved fork length, pectoral fork length, round weight, gutted weight and headed and gutted weight. For these species, sex is identified and the sexual maturity stage is determined only for bigeye and yellowfin tuna.

Handliners

Size frequencies of landed species are conducted routinely in each harbor of Reunion Island for the small scale fishery. The IOTC gear code used is “Handline” while this fishery can also use rod and reel, and longlines. 6 % of trips are sampled to assess the quantity of the different species landed and the gear used. Size measurements are taken in a ratio of 1 fish sampled for each metric ton landed as required by IOTC.

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

2. Deviations from the Work Plan

On shore: Purse seine fishery (PSF)

No deviation was observed for the Indian ocean regarding the sampling plan on shore for the tuna purse seine fishery (PSF). It must be noted a higher coverage of PSU in 2018 and 2019 than in 2017 in order to increase the accuracy of the estimates of the yellowfin catches.

At-sea: Purse seine fisheries (PSF)

The human observer coverage for the PSF in the Indian ocean reached 20% instead of 10%. This augmentation was decided in order to increase the accuracy of catch estimates (in number and/or weight) or interaction events for the less occurrent sensitive species (large individuals of silky shark, oceanic whitetip shark, mobulids, ...).

On shore : longliners in La Réunion

No deviation was observed.

At-sea: Pelagic longliners in La Réunion

In 2018, the subcontractor in charge of data collection was in judicial liquidation. A new public contract has been awarded to a new subcontractor since March 31, 2019.

3. Action to avoid deviations

None

SECTION 4: SAMPLING STRATEGY FOR BIOLOGICAL DATA FROM COMMERCIAL FISHERIES

TEXT BOX 4A: SAMPLING PLAN DESCRIPTION FOR BIOLOGICAL DATA

Region: South Eastern Atlantic (ICCAT)

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

Purse seiners

For landings the sampling is conducted in conjunction with France's partners in the countries where catches are landed and sampled. The partners involved in the Atlantic ocean are:

- the CRO in Côte d'Ivoire (Centre de Recherches Océanologiques in Abidjan, attached to the Ministry of Research),

- the CRODT in Senegal (Centre de Recherches Océanographiques de Dakar-Thiaroye in Dakar, attached to Senegal's Institute for Agricultural Research).

- The Scientific Fisheries Survey Division of Tema (Ghana) can be involved in the sampling of landings.

Those sampling activities are homogeneous for the whole UE purse seine fishery in the Atlantic Ocean.

Methodologies applied are as follows:

In the case of tropical tuna fisheries, it is imperative to estimate the species composition of landings insofar as these are weighted according to commercial categories based more on length size than on species, which is a major source of bias. The catch for each species can be estimated by cross-correlation of information from fishing logbooks, VMS data and information about landings provided by the producer organisation, as well as from the sampling of species composition at the landing site. Sampling is carried out concurrently in port and then pooled for estimates of the length and species compositions of landings on the basis of predefined spatial and temporal strata, according to the type of association and the weight category of the individuals. This involves a minimum number of samples for each stratum and a predetermined population of individuals for each sample, which differs according to the fishing mode. Adherence to these procedures results in an important number of sampled and measured individuals, this arises from the fact that in order to achieve a reasonable level of precision for the estimation of the species composition necessary to examine a large number of individuals for each sample (500 for log sets, 200 for free school sets). When the number of samples is considered insufficient a substitution procedure follows ocean-based schemes which vary between size and species composition.

Reference: *Pianet R., P. Pallares and Ch. Petit, 2000. New sampling and data processing strategy for estimating the composition of catches by species and sizes in the European purse seine tropical tuna fisheries. IOTC-WPDCS/2000/10*

Bycatch and discards: Discards of both target species (tunas) as priority and second bycatch are monitored by at-sea observers. Observations consist in counting, species composition, length measurements (and weighting when possible). The observer handles all the discards, and when not possible, a fraction of it that is raised at the level of the fishing set. In such cases, discarded fish are randomly sampled to be counted and measured. When possible the condition (dead or alive) of discarded fish is monitored.

Pole and lines

For the landings occurring only in Dakar (Senegal) the sampling procedures that are described in the IOTC section for purse seiners also apply for the Atlantic Ocean pole liner fleet. There is no observer data collected for this metier.

1. Results

2. Deviations from the Work Plan

On shore: Purse seine and Pole and line fisheries
No deviations were observed regarding the sampling plan on shore for the tuna purse seine fishery (PSF).
No deviations were observed for the Pole and Line fishery regarding the sampling plan on shore.
At-sea: Purse seine fisheries (PSF)

The human observer coverage for the PSF reached 20% instead of 10%. This augmentation was decided in order to increase the accuracy of catch estimates (in number and/or weight) or interaction events for the less occurrent sensitive species (large individuals of silky shark, oceanic whitetip shark, mobulids, ...).

3. Action to avoid deviations

None.

TEXT BOX 4A: SAMPLING PLAN DESCRIPTION FOR BIOLOGICAL DATA

Region: South Western Atlantic (WECAFC and ICCAT)

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

The biological data as referred in Chapter 3 (2) of the Commission Implementing Decision (EU) 2016/1251, is taken from the on-shore sampling plan (sampling schemes: "On-shore sampling - ObsVentes": estimation of length structures of the fractions landed

The primary sampling units are the port*day for the on-shore sampling. For any trip sampled the general rule is the use a restricted list of species related to metiers.

To progress towards statistical sound sampling, several initiatives were taken in recent years. First a website dedicated to presenting and monitoring the sampling plan was put in place. For details see both sampling protocols available on the website (see table 5A).

The quality assurance which was developed made use of advanced controls in the data input tool (Allegro, see input protocols on the websites), and multi level validation before being transferred in the database Harmonie. Note that most of the french validation functions were transcripted in the fishPi project (MARE/2014/19).

For data processing and answering the multitude of datacalls, a specific organisation has been put in place in 2013, making use of the COST library, a dedicated supervisor, an engineer and all experts in stock assessment helping on the built-up and validation of the datasets for the expert groups. The first years were considered as learning years, and the full operationality of the process was effective in 2016, following the implementation of an action plan proposed to the EU in 2015 (EMFF ex-ante conditions).

1. Results

Sampling for length structure of the landings is carried out in French Guyana, Martinique and Guadeloupe as a routine task.

2. Deviations from the Work Plan

Due to tropical weather conditions, lengthy manipulations of the fish are not acceptable to fishermen. The number of individuals sampled each time is therefore low.

To make up for this, it necessary to sample more sampling units (port*day) in order to obtain a sufficient number of individuals, in particular in Martinique and Guadeloupe, where adjustments are still to be made for a better efficiency of the sampling. This is the reason why all targets have been overshoot in terms of number of trips to harbours, but with still insufficient impact on the number of fish measured.

3. Action to avoid deviations

Overseas islands sampling is now entirely included in the national sampling plan, with the same tools deployed for monitoring the sampling and populating the information in the central database. Specificities of the islands (large number of scattered harbours with small number of vessels, remote harbours difficult to access, tropical weather and difficulty to manipulate the fish, …) are yet to be adjusted for a fully efficient programme. Another difficulty is the large variety of demersal species, none of them leading to more than 5% of the total caches. Therefore, it is important that WECAFC give clear expectations in terms of priority species to sample.

SECTION 5: DATA QUALITY

TEXT BOX 5A: QUALITY ASSURANCE FRAMEWORK FOR BIOLOGICAL DATA

Region: North Sea and Eastern Arctic

Sampling schemes: At-sea sampling – ObsMer, On-shore sampling - ObsVentes, Biological parameters, Activity variables, Scientific surveys, Elasmobranches on shore, Self-sampling at sea

1. Evidence of data quality assurance

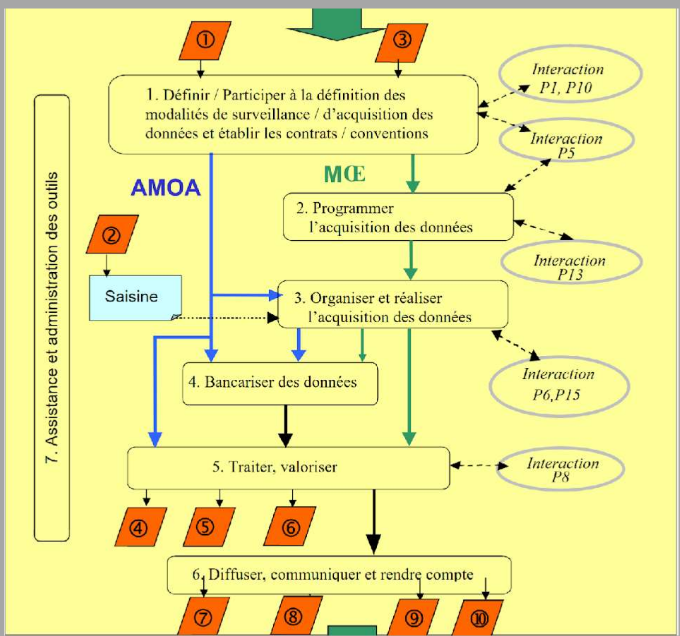
Elasmobranches on shore

In regard with the Elasmobranches on shore sampling scheme, a French and English version of the 2017-2019 protocol can be downloaded on the dedicated webpage https://borea.mnhn.fr/fr/feamp-dcf-elasmo (Protocol_DCF_MNHN_2019_en, 2022 kb).

This document explain the way data are collected monthly under V0701 stratum (see Table 4A and Table 4B), the sampling procedure for controlling the quality of the data and, in appendix, the attached documents to acquire the biological parameters.

During the second semester 2019, one sub-contractor (http://www.oceanic-dev.com/) is implemented in the field to carry out collection in one auction, Port-en-Bessin. Sub-contractors' work is limited to the collection of data under auction by scrupulously complying with MNHN's protocol. The MNHN carries out the validation and computerizes all biological and commercial data.

All other sampling schemes



Ifremer is developing a full scale quality assurance is qualified ISO 9001. The ISO 9001 quality process for fisheries data collection is included in the process #7 'Monitoring the littoral environment and the biological resources' (see process scheme above). The scheme covers all the topics described in this section of the report

1. Definition of the monitoring modalities
2. Definition of the sampling planning
3. Organising and realizing the data collections
4. Data storage

5. Data processing
6. Data provisions and communication

The acronym used in the scheme above are the following:

- MOA = maître d'ouvrage = Project manager. The fisheries directorate (DPMA) is project manager for on-shore (ObsVentes) and at-sea (ObsMer) programmes. These programmes are implemented in the field by sub-contractors (1 lot considers actions to be carried out in Eastern Channel and North Sea). Ifremer is project manager for the collection of biological parameters and for scientific surveys.
- AMOA = Assistance à Maîtrise d'ouvrage = Assistant to Project Manager. Ifremer acts as Assistant to project manager for on-shore (ObsVentes) and at-sea (ObsMer) programmes

2. Sampling design

As part of the work to be carried out within the at-sea and on-shore data collection programmes which were fully subcontracted in the region, all guidelines, protocols and guidelines were developed and made available on a website (see table 5A).

Survey protocols are available at the following hyperlink: http://www.ifremer.fr/SIH-indices-campagnes/survey.action

The only scheme for which sampling design is not yet fully documented is self sampling as it is still in development in 2019.

3. Sampling implementation

For commercial catch sampling schemes, a web application (WAO) was developed in order to monitor closely the sub-contractors work, register refusals and reasons for cancelling an observation (bad weather, shift in metier activity, lack of room on board, security issues, …). This web application has developed outputs to quantify the work achieved (realised vs planned, number of days between observation and population into the database, …) and is used on a real-time basis to adjust the sampling allocation and as a communication tool between involved parties.

A WAO user guide for observers has been developed (in French, restricted access, can be sent on demand) https://sih.ifremer.fr/content/download/23062/159067/file/Guide_WAO_V5.3.3.pdf

4. Data capture

Ifremer has developed a fully-fledged software for capturing the fisheries sampling data, named Allegro. All necessary information can be found on a dedicated web-page (http://www.ifremer.fr/allegro/index.html). This software offers scientists and technicians the complete palette of forms required for the entry of all types of data to be collected as part of EU-MAP and during fieldwork in general. Its core purpose is thus to cover the whole range from economic surveys to biological sampling (at-sea and on-shore) sampling and at sea scientific surveys. In order to ensure high quality for the data prior to their transfer to the Ifremer's *Harmonie* central database, the data are pre-validated automatically by applying plausibility criteria consistent with the reference criteria of Ifremer's Fisheries Information System [*System d'informations halieutiques* (SIH)] and *Harmonie* (active vessels, taxonomic references, reference lists of metiers, and so on). In addition, this software provides data collectors with all the preliminary documentation required for their data collection activities.

In regard with the Elasmobranches on shore scheme, the data capture proceed in two steps:

- In the first step, the data entry process is done via a form accessible only to the MNHN agent working on the DCF program in a database developed under Microsoft ACCESS called DCF-MNHN-SAISIE. Once entered, the data from the different tables are stored in this same database on the MNHN's secure computers. Once a week the file is updated on a secure server within Dinard's Marine Biology Station, itself synchronized with the Oracle database (PecheKer) on a MNHN server in Paris.

- In the second step, and before the final storage in Ifremer Harmonie database for data processing, a set of automated verification procedures in accordance with Ifremer team is applied to detect, correct or invalidate any outliers.

5. Data Storage

Ifremer has developed a central database (HARMONIE) for all fishery-dependent and fishery-independent data. The central system integrates the main sources of data for the "Fisheries Information System" (SIH):

- Fishery statistics and activity of the fleets managed by the Directorate of Maritime Fisheries and Aquaculture (DPMA) or collected by the SIH Observation Network;
- The information collected in the context of the collection of economic data to assess the economic indicators of the production of fishing vessels;
- Data Observations at sea (on board fishing vessels) and Sampling on shore to obtain the size and / or age structure of catches (retained and discarded) of the main species exploited by French fleets;
- Data provided by the MNHN for the Elasmobranches on shore sampling scheme
- Biological parameters for stock assessment.
- Data from the sea surveys conducted by Ifremer.

The system is designed to meet the following requirements:

- setting up a common reference system for the various sources of SIH information,
- the integration of the data of the different sources of information into a central system by ensuring their safeguard, integrity and durability, the quality control and dissemination,
- the transversal integration of SIH data with additional data from other Ifremer systems (environment, ...),
- the rationalization of the exploitation of data around a dedicated team,
- the export of fishery-dependent and biological parameters to COST format for data processing.

6. Data processing

Two main developments can be considered for data processing of fisheries data in the regional

- SACROIS: application for reporting fisheries statistics and quantify population indicators for raising the sampled data by strata. This application crosses all information issued from the control regulation (logbooks, dales notes, VMS) and also fleet activities (see section 2A) to provide a complete and quality controlled information on the fishing activities and catches.
- COST library: the exploratory analysis and raising procedures for discards, length and age structures and biological parameters are done with the COST library. R scripts have been developed based on the methods embedded in COST to automatize the provisions of data sets to end-users. For each stock, each year, a repository is created on a common drive to store all the supporting information, the R script having been used and a document describing all outputs and exploratory analysis.

A dedicated team has been put in place to process all data demanded through formal data calls (CREDO standing for Cellule de REponse aux appels à Données). The CREDO team prepares the data formatted as demanded by end-users based on the information provided by SACROIS and information from the sampling prepared with the COST library. A monitoring tool is used to track all demands and taking care of the work progress and dedication to the deadlines for submitting the data.

TEXT BOX 5A: QUALITY ASSURANCE FRAMEWORK FOR BIOLOGICAL DATA

Region: North Atlantic

Sampling schemes: At-sea sampling – ObsMer, On-shore sampling - ObsVentes, Biological parameters, Activity variables, Scientific surveys, Elasmobranches on shore, Self-sampling at sea

1. Evidence of data quality assurance

Elasmobranches on shore

In regard with the Elasmobranches on shore sampling scheme, a French and English version of the 2017-2019 protocol can be downloaded on the dedicated webpage https://borea.mnhn.fr/fr/feamp-dcf-elasmo (Protocol_DCF_MNHN_2019_en, 2022 kb).

This document explain the way data are collected monthly under V0700 and V0702 strata (see Table 4A and Table 4B), the sampling procedure for controlling the quality of the data and, in appendix, the attached documents to acquire the biological parameters

During the second semester 2019, two sub-contractors (https://www.sinay.fr/ and http://www.oceanic-dev.com/) are implemented in the field to carry out collection in 2 auctions located in the Bay of Biscay (V0702) and 1 located in Normandie (V0700). Sub-contractors' work is limited to the collection of data under auction by scrupulously complying with MNHN's protocol. The MNHN carries out the validation and computerizes all biological and commercial data.

All other sampling schemes

See text on textbox 5A – Region North Sea and Eastern Arctic for Ifremer quality assurance framework.

In the North Atlantic, the fisheries directorate (DPMA) is project manager for on-shore programme (ObsVentes) and at-sea programme (ObsMer). These programmes are implemented in the field by sub-contractors (2 lots consider actions to be carried out in the Bay of Biscay, Celtic Seas, West of Ireland, West of Scotland and Western Channel).

Ifremer acts as Assistant to project manager for on-shore (ObsVentes) and at-sea (ObsMer) programmes.

Ifremer is project manager for scientific surveys.

2. Sampling design

As part of the work to be carried out within the at-sea and on-shore data collection programmes which were fully subcontracted in the region, all guidelines, protocols and guidelines were developed and made available on a website (see table 5A).

Survey protocols are available at the following hyperlink: http://www.ifremer.fr/SIH-indices-campagnes/survey.action

The only scheme for which sampling design is not yet fully documented is self sampling as it is still in development in 2019.

3. Sampling implementation

A web application (WAO) was developed in order to monitor closely the sub-contractors work, register refusals and reasons for cancelling an observation (bad weather, shift in metier activity, lack of room on board, security issues, …). A specific application was developed for at-Sea ObsMer, on-shore ObsVentes and for biological parameters. The web application has also developed outputs to quantify the work achieved (realised vs planed, number of days between observation and population into the database, …) and is used on a real-time basis to adjust the sampling allocation and a communication tool between the project manager (DPMA), the assistant to project manager (Ifremer) and the sub-contractors.

A WAO user guide for observers has been developed (in French, restricted access, can be sent on demand) https://sih.ifremer.fr/content/download/23062/159067/file/Guide_WAO_V5.3.3.pdf

The two Elasmobranches on shore stratum are fully integrated in the WAO application.

4. Data capture

Ifremer has developed a fully-fledged software for capturing the fisheries sampling data, named Allegro. All necessary information can be found on a dedicated web-page (http://www.ifremer.fr/allegro/index.html). This software offers scientists and technicians the complete palette of forms required for the entry of all types of data to be collected as part of EU-MAP and during fieldwork in general. Its core purpose is thus to cover the whole range from economic surveys to biological sampling (at-sea and on-shore) sampling and at sea scientific surveys. In order to ensure high quality for the data prior to their transfer to the Ifremer's *Harmonie* central database, the data are pre-validated automatically by applying plausibility criteria consistent with the reference criteria of Ifremer's Fisheries Information System [*System d'informations halieutiques* (SIH)] and *Harmonie* (active vessels, taxonomic references, reference lists of metiers, and so on). In addition, this software provides data collectors with all the preliminary documentation required for their data collection activities.

In regard with the Elasmobranches on shore scheme, the data capture proceed in two steps:

- In the first step, the data entry process is done via a form accessible only to the MNHN agent working on the DCF program in a database developed under Microsoft ACCESS called DCF-MNHN-SAISIE. Once entered, the data from the different tables are stored in this same database on the MNHN's secure computers. Once a week the file is updated on a secure server within Dinard's Marine Biology Station, itself synchronized with the Oracle database (PecheKer) on a MNHN server in Paris.
- In the second step, and before the final storage in Ifremer Harmonie database for data processing, a set of automated verification procedures in accordance with Ifremer team is applied to detect, correct or invalidate any outliers.

5. Data Storage

Ifremer has developed a central database (HARMONIE) for all fishery-dependent and fishery-independent data. The central system integrates the main sources of data for the "Fisheries Information System" (SIH):

- Fishery statistics and activity of the fleets managed by the Directorate of Maritime Fisheries and Aquaculture (DPMA) or collected by the SIH Observation Network,
- The information collected in the context of the collection of economic data to assess the economic indicators of the production of fishing vessels,
- Data Observations at sea (on board fishing vessels) and Sampling on shore to obtain the size and / or age structure of catches (retained and discarded) of the main species exploited by French fleets,
- Data provided by the MNHN for the Elasmobranches on shore sampling scheme,
- Biological parameters for stock assessment,
- Data from the sea surveys conducted by Ifremer.

The system is designed to meet the following requirements:

- setting up a common reference system for the various sources of SIH information,
- the integration of the data of the different sources of information into a central system by ensuring their safeguard, integrity and durability, the quality control and dissemination,
- the transversal integration of SIH data with additional data from other Ifremer systems (environnement, ...),
- the rationalization of the exploitation of data around a dedicated team,
- the export of fishery-dependent and biological parameters to COST format for data processing.

6. Data processing

Two main developments can be considered for data processing of fisheries data in the regional

- SACROIS: application for reporting fisheries statistics and quantify population indicators for raising the sampled data by strata. This application crosses all information issued from the control regulation (logbooks, dales notes, VMS) and also fleet activities (see section 2A) to provide a complete and quality controlled information on the fishing activities and catches.

- COST library: the exploratory analysis and raising procedures for discards, length and age structures and biological parameters are done with the COST library. R scripts have been developed based on the methods embedded in COST to automatize the provisions of data sets to end-users. For each stock, each year, a repository is created on a common drive to store all the supporting information, the R script having been used and a document describing all outputs and exploratory analysis.

A dedicated team has been put in place to process all data demanded through formal data calls (CREDO standing for Cellule de REponse aux appels à Données). The CREDO team prepares the data formatted as demanded by end-users based on the information provided by SACROIS and information from the sampling prepared with the COST library. A monitoring tool is used to track all demands and taking care of the work progress and dedication to the deadlines for submitting the data.

TEXT BOX 5A: QUALITY ASSURANCE FRAMEWORK FOR BIOLOGICAL DATA

Region: Mediterranean Sea and Black Sea

Sampling schemes: At-sea sampling – ObsMer, On-shore sampling - ObsVentes, Biological parameters, Activity variables, Scientific surveys, DACOR

1. Evidence of data quality assurance

DACOR:

Specifically for Corsica (GSA08), the EU-MAP partner OEC (Office de l'Environnement de la Corse) runs the at-sea observation programme named DACOR.

All other schemes

See text on textbox 5A – Region North Sea and Eastern Arctic for a brief summary of Ifremer quality assurance framework.

In the Mediterranean (no French fisheries in the Black Sea), the fisheries directorate (DPMA) is project manager for on-shore (ObsVentes) and at-sea (ObsMer) programmes. These programmes are implemented in the field by sub-contractors (1 lot considers actions to be carried out in the Gulf of Lion GSA07).

Ifremer acts as Assistant to project manager for on-shore (ObsVentes) and at-sea (ObsMer) programmes, and is project manager for catch assessment survey (ObsDeb).

Ifremer runs the scientific surveys (MEDITS and MEDIAS).

2. Sampling design

As part of the work to be carried out within the at-sea, on-shore data and catch assessment survey which were fully subcontracted in the region, all guidelines, protocols and guidelines were developed and made available on a website (see table 5A).

Survey protocols are available at the following hyperlink:

http://www.ifremer.fr/SIH-indices-campagnes/survey.action

In Corsica, the sampling protocols have been developed in compatibility with Obsmer protocols. They are deliverables of the DACOR project and will be presented in the final report of the project in September 2020 and published on the websites of the OEC and the project partners.

3. Sampling implementation

A web application (WAO) was developed in order to monitor closely the sub-contractors work, register refusals and reasons for cancelling an observation (bad weather, shift in metier activity, lack of room on board, security issues, …). A specific application was developed for at-Sea ObsMer, on-shore ObsVentes and for biological parameters. The web application has also developed outputs to quantify the work achieved (realised vs planed, number of days between observation and population into the database, …) and is used on a real-time basis to adjust the sampling allocation and a communication tool between the project manager (DPMA), the assistant to project manager (Ifremer) and the sub-contractors.

A WAO user guide for observers has been developed (in French, restricted access, can be sent on demand):

https://sih.ifremer.fr/content/download/23062/159067/file/Guide_WAO_V5.3.3.pdf

Work is on going to integrate Corsican sampling data within the WAO application.

4. Data capture

Ifremer has developed a fully-fledged software for capturing the fisheries sampling data, named Allegro. All necessary information can be found on a dedicated web-page (http://www.ifremer.fr/allegro/index.html). This software offers scientists and technicians the complete palette of forms required for the entry of all types of data to be collected as part of EU-MAP and during fieldwork in general. Its core purpose is thus to cover the whole range from economic surveys to biological sampling (at-sea and on-shore) sampling and at sea scientific surveys. In order to ensure high quality for the data prior to their transfer to the Ifremer's *Harmonie* central database, the data are pre-validated automatically by applying plausibility criteria consistent with the reference criteria of Ifremer's Fisheries Information System [*System d'informations halieutiques* (SIH)] and *Harmonie* (active vessels, taxonomic references, reference lists of metiers, and so on). In addition, this software provides data collectors with all the preliminary documentation required for their data collection activities.

In Corsica , OEC has developed a fully-fledged software for capturing the fisheries sampling data, named *Base de données halieutiques corses* .within the framework of DACOR project. This software offers scientists and technicians the forms required for the observations at sea specifically adapted to small scale fisheries and auto-sampling made by fisher men (not included in DCF). Data Observations at sea (on board fishing vessels) and Sampling on shore allows to obtain the size and / or age structure of catches (retained and discarded) of the main species exploited by Corsican fleets. These data observations allow to obtain a categorisation of releases caused by the depredation of sea fleas, *Tusiops truncatus,*morey, individuals under catch limit size released alive, individuals alive and dead out of quota, individuals alive and dead out of AEP, releases because not marketed… This database also give the forms requiered for biological parameters for stock assessment.

5. Data Storage

Ifremer has developed a central database (HARMONIE) for all fishery-dependent and fishery-independent data. The central system integrates the main sources of data for the "Fisheries Information System" (SIH):

- Fishery statistics and activity of the fleets managed by the Directorate of Maritime Fisheries and Aquaculture (DPMA) or collected by the SIH Observation Network;
- The information collected in the context of the collection of economic data to assess the economic indicators of the production of fishing vessels;
- Data Observations at sea (on board fishing vessels) and Sampling on shore to obtain the size and / or age structure of catches (retained and discarded) of the main species exploited by French fleets;
- Biological parameters for stock assessment.
- Data from the sea surveys conducted by Ifremer.

The system is designed to meet the following requirements:

- setting up a common reference system for the various sources of SIH information,
- the integration of the data of the different sources of information into a central system by ensuring their safeguard, integrity and durability, the quality control and dissemination,
- the transversal integration of SIH data with additional data from other Ifremer systems (environment, ...),
- the rationalization of the exploitation of data around a dedicated team;
- the export of fishery-dependent and biological parameters to COST format for data processing.

In Corsica, the programme DACOR has developed a database which enables the export of data into the COST format (see section below).

6. Data processing

Four main developments can be considered for data processing of fisheries data in the regional

- SACROIS: application for reporting fisheries statistics and quantify population indicators for raising the sampled data by strata. This application crosses all information issued from the control regulation (logbooks, dales notes, VMS) and also fleet activities (see section 2A) to provide a complete and quality controlled information on the fishing activities and catches.
- OBSDEB: the estimation of catches and effort in done through a dedicated programme.
- COST library: the exploratory analysis and raising procedures for discards, length and age structures and biological parameters are done with the COST library. R scripts have been developed based on the methods embedded in COST to automatize the provisions of data sets to end-users. For each

stock, each year, a repository is created on a common drive to store all the supporting information, the R script having been used and a document describing all outputs and exploratory analysis.

- DACOR: The data from Corsica is exported in the COST format and processed together with the Gulf of Lion data following the CREDO procedure (see below).

A dedicated team has been put in place to process all data demanded through formal data calls (CREDO standing for Cellule de REponse aux appels à Données). The CREDO team prepares the data formatted as demanded by end-users based on the information provided by SACROIS and information from the sampling prepared with the COST library. A monitoring tool is used to track all demands and taking care of the work progress and dedication to the deadlines for submitting the data.

Text Box 5A: Quality assurance framework for biological data

Region: Other region – Indian Ocean (IOTC)

On-shore sampling - ObsVentes , Large pelagic sizes on foreign shores, Large pelagics at sea, Large pelagic biological data in foreign tuna canneries

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.

1. Evidence of data quality assurance

In the Indian ocean, the partners of the data collection are IRD (French National Research Institute for Sustainable Development) taking care of large pelagic sizes on foreign shores and large pelagics at sea. On shore, Ifremer takes care of large pelagics sampling in La Réunion (see region North Sea and Eastern Arctic for the brief summary on Ifremer data quality assurance), and PNMM (Parc National Marin de Mayotte) takes care of sampling in Mayotte.

The data quality assurance developed at Ifremer is followed for on-shore sampling and catch assessment surveys in La Réunion and Mayotte (see section on North Sea and Eastern Arctic region) and developed at IRD for at-sea sampling and on-shore sampling on foreign harbours (see section on South Eastern Atlantic region).

2. Sampling design

As part of the work to be carried out within on-shore data collection programmes all guidelines, protocols and guidelines were developed and made available on a website (see table 5A).

In the Atlantic and Indian Oceans purse seine sampling by scientific observers follows a specific and common methodology edited in a manual used by IRD, AZTI and IEO. Both samplings at market and at sea are analyzed in joint workshops, in the frame of RCG Large Pelagic, with other scientific institutes using the same methodology (e.g., IEO, AZTI, CRODT, etc.). Moreover, the sampling follows the methodology described by IOTC and ICCAT manuals (like in: http://www.iccat.int/es/ICCATManual.asp).

3. Sampling implementation

For on-shore sampling, a web application (WAO) was developed in order to monitor closely the work on the field. The sampling design as planned in the NWP is transcripted in WAO application every year.

For on-shore on foreign shores, the sampling design and protocols follow the RFMOs guidelines of sampling. Outliers and anomalous registrations have been detected using statistical techniques and routinely applications which avoid their input.

4. Data capture

For on-shore data, the ALLEGRO software is used (see section Data capture in North Sea and Eastern Arctic Region).

The data from large pelagics at sea and on foreign on shores are respectively collected in the *ObServe* and *AVDTH* softwares (see section Data capture in “Other region – South Eastern Atlantic (ICCAT)”).

5. Data Storage

For on-shore data, the information issued from ALLEGRO software is imported in the HARMONIE database (see section Data storage in North Sea and Eastern Arctic region).
The data from large pelagics at sea and on foreign on shores are respectively stored in the *ObServe* and *T3* databases (see section Data storage in “Other region – South Eastern Atlantic (ICCAT)”).

6. Data processing

Three main developments can be considered for data processing of fisheries data in the region

- OBSDEB: the estimation of catches and effort in La Réunion and Mayotte is done through a dedicated programme.
- COST library: the exploratory analysis and raising procedures for length structures from on-shore sampling are done with the COST library and processed following the CREDO procedure (see section on North Sea and Eastern Arctic region).
- T3: (see section Data processing in “Other region – South Eastern Atlantic (ICCAT)”).

TEXT BOX 5A: QUALITY ASSURANCE FRAMEWORK FOR BIOLOGICAL DATA

Region: Other region – Western Central Atlantic (ICCAT and WECAFC)

On-shore sampling - ObsVentes

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.

1. Evidence of data quality assurance

In the WECAFC area (French Guyana, Martinique and Guadeloupe) Ifremer is the only contributor to the biological data collection (See text on textbox 5A – Region North Sea and Eastern Arctic for a brief summary of Ifremer quality assurance framework).

More specifically, In French Guyana, Ifremer runs the data collection in the main harbour of Cayenne, and is project manager for the other harbours. In Martinique Ifremer runs the programme and in Guadeloupe Ifremer is project manager. All theses programmes are totally included in the same data quality assurance as in the mainland.

2. Sampling design

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As part of the work to be carried out within on-shore data collection programmes all guidelines, protocols and guidelines were developed and made available on a website (see table 5A).

3. Sampling implementation

For on-shore sampling, a web application (WAO) was developed in order to monitor closely the work on the field. The sampling design as planned in the NWP is transcripted in WAO application every year

4. Data capture

For on-shore data, the ALLEGRO software is used (see section Data capture in North Sea and Eastern Arctic Region).

5. Data Storage

For on-shore data, the information issued from ALLEGRO software is imported in the HARMONIE database (see section Data storage in North Sea and Eastern Arctic region).

6. Data processing

Two main developments can be considered for data processing of fisheries data in the regional

- OBSDEB: the estimation of catches and effort is done through a dedicated programme.
- COST library: the exploratory analysis and raising procedures for length structures are done with the COST library and processed following the CREDO procedure (see section on North Sea and Eastern Arctic region).

Text Box 5A: Quality assurance framework for biological data

Region: Other region – South Eastern Atlantic (ICCAT)

1. Evidence of data quality assurance

IRD has developed a quality assurance based on quality management system (QMS) and is qualified ISO 9001:2015 since February 2017 (https://www.ob7.ird.fr/pages/quality-policy.html).

2. Sampling design

The sampling design and protocols follow the RFMOs guidelines of sampling. Outliers and anomalous registrations have been detected using statistical techniques and routinely applications which avoid their input.

In the Atlantic and Indian Oceans purse seine sampling by scientific observers follows a specific and common methodology edited in a manual used by IRD, AZTI and IEO. Both samplings at market and at sea are analyzed in joint workshops with other scientific institutes using the same methodology (e.g., IEO, AZTI, CRODT, etc.). Moreover, the sampling follows the methodology described by IOTC and ICCAT manuals (like in http://www.iccat.int/es/ICCATManual.asp).

As part of the work to be carried out within the at-sea and on-shore data collection programmes which were fully subcontracted in the region, all guidelines, protocols and guidelines were developed and made available on a website (see table 5A).

4. Data capture

IRD has developed two fully-fledged softwares: one for capturing the fisheries landings and sampling on-shore data on foreign shores, named AVDTH; another one for capturing the fisheries sampling at-sea data, named ObServe. This softwares offers scientists and technicians the complete palette of forms required for the entry of all types of data to be collected as part of EU-MAP and during fieldwork in general. Its core purpose is thus to cover the whole range from economic surveys to biological sampling (at-sea and on-shore) sampling and at sea scientific surveys. In order to ensure high quality for the data prior to their transfer to the central database, the data are pre-validated automatically by applying plausibility criteria consistent with the reference criteria of IRD's Exploited Tropical Pelagic Ecosystems Observatory (active vessels, taxonomic references, reference lists of metiers, and so on). In addition, this software provides data collectors with all the preliminary documentation required for their data collection activities.

The main problems in large pelagic fisheries are the wide range of length distributions and the huge weight range of the individuals. There are trips with landings of kg and trips with landings of tons. The data quality of sampling is considered satisfactory. For most of the species, the number of individuals is difficult to plan in advance. It will depend on the access to the samples. In the case of by-catch species (usually low prevalence), the number of individuals sampled at national level cannot be planned in advance.

5. Data Storage

IRD has developed three databases to store all fishery data:

- Observe: ObServe is designed to be generic in order to cover the needs of any observation program of purse-seine or longline fisheries. ObServe consists of a central database and multiple instances of the acquisition and management software. The software can be used offline (without connection to the central database) as it uses a built-in instance of the database model that is identical to the central database model. Synchronization functions are used to (i)download/update reference data from the central database to the software instance, and (ii) upload data collected (and saved offline) by the observer into the central database.
- T3: T3 is designed to store the raw data collected from logbook, landings and sampling on–shore on foreign shores, and the data after T3 processing (see Data processing below).
- Biotuna: Biological parameters collected in tuna canneries

6. Data processing

The multi-species nature of tropical tuna surface fisheries gives rise to a series of difficulties when estimating the catch by species and catch at size statistics. The T3 processing is built in order to correct biases of the logbook data on species composition and to provide more accurate catch estimates per species, taking into account data from sampling at port. This methodology is common to IRD and IEO (Spain).

Text Box 5A: Quality assurance framework for biological data

Region: All regions – Eel (Anguilla anguilla)

1. Evidence of data quality assurance

The eel data sets are collected by different data providers. The OFB works as data coordinator to make data available at the national level and to standardize the procedures and processing to ensure a good quality assurance framework. For that, the construction of the sampling designs was done in collaboration with different actors of the eel sector at the national level (eel management plan). Sampling designs, sampling protocols and data storage are defined for all types of monitoring. Common data verification procedures are being developed with the different data providers (meetings have been held in 2019 and will be held in 2020) for electrofishing and trap monitoring.

2. Sampling design

Declaration: In the public river domain, recreational and professional fishermen fishing with gears and nets are monitored under the SNPE (Suivi National de la Pêche aux Engins / National monitoring of fishing with gears by monthly declaration of catches). The sampling design can be found on the following website : https://professionnels.ofb.fr/sites/default/files/pdf/snpe_2003-2012_201505.pdf

Sampling/purchase: The purchase of eels is carried out at the EMU level by covering the different sectors where professional fishing takes place. Sampling is carried out over the entire fishing period depending on the stages and on the EMU. The sampling designs (for adults and juveniles) are currently being drafted and will be available in 2021 on the following website : https://ponapomi.afbiodiversite.fr/.

Electrofishing: The sampling design can be found on the following report : https://www.afbiodiversite.fr/sites/default/files/PDF/Education-Sensibilisation/Rapport%20PGA%202018%20-%20France.pdf from page 8 to page 13.

Trap: The sampling design can be found on the following report : https://www.afbiodiversite.fr/sites/default/files/PDF/Education-Sensibilisation/Rapport%20PGA%202018%20-%20France.pdf from page 8 to page 13

3. Sampling implementation

Sampling declaration: In november 2019, the deployment of the new SNPE project (CESMIA) was made to facilitate feedback on non-declarations which are now only followed with difficulty by the state services. The project relies on the teledeclaration (teledeclaration started in january 2020).

Electrofishing & trap : the electrofishing sampling sites where and the days when the data could not be collected at fish counting facilities are saved in the databases as well as the reasons for this non-sampling.

4. Data capture

Sampling declaration : the fishermen send their declarations (monthly forms) to the address designated by OFB who saved the data in the SNPE database. This will change in 2020 with the teledeclaration

Sampling/purchase : The protocols (for adults and juveniles) are currently being drafted and will be available in 2021 on the following website : https://ponapomi.afbiodiversite.fr/.

Electrofishing : Most of the protocols used for electrofishing can be found on the following report https://professionnels.ofb.fr/sites/default/files/pdf/guide_de_peches_a_lelectricite.pdf and the specific Eel abundance index protocol can be found in the following report : https://professionnels.ofb.fr/sites/default/files/pdf/guide_de_peches_a_lelectricite.pdf

Trap : Each of the migration control stations have their own protocol depending on the trap, the sampled stages and the constraints. All data providers are in the process of filling out or validating protocol sheets that will be made available in 2021.

5. Data Storage

All the data are stored in the appropriate national databases :

Sampling/purchase : base IFREMER

Sampling declaration : SNPE

Electrofishing : WAMA/ASPE/RSA

Trap : STACOMI

For electrofishing and migration control stations sampling, meetings are organised in 2019 and 2020 with the different data providers to discuss quality checks and develop common quality procedures.

6. Data processing

Fishing declaration: It is the raw data that is delivered. In 2019 a national working group laid the foundations for data quality. the first guidelines are implemented, the complete process will be operated for the end of 2019.

Sampling/purchase : raw data

Electrofishing & trap : the raw data are used in the model EDA to estimate the escapement of silver eels from French rivers (estimates made for the implementation report).

Text Box 5A: Quality assurance framework for biological data

Region: All regions – Salmon (Salmo salar)

1. Evidence of data quality assurance

Sampling scheme: salmo salar* electofishing, salmo salar * trap

The quality of the data is steered by the observatory for environmental research on diadromous fish in coastal rivers (ORE DiaPFC) for salmo salar* electrofishing and salmo salar * trap sampling scheme (https://www6.inrae.fr/diapfc/Dispositifs/Observatoires-in-natura).
The different trapping systems are not fully effective. In order to estimate the total number of individuals, -capture-mark-recapture operations are carried out all along the migrations. Monitoring by electrofishing is carried out by people trained according to a strict protocol (Prévost 1995*). On the Bresle river, the implementation of a monitoring network by electrofishing is recent and under construction. The current work is to make the relation between the number fished and the density of salmon according to the same protocol as the other rivers. Identification of species and sex is carried out by confirmed operators and most often in pairs. Length and weight are measured and automatically sent by bluethooth to avoid transcription errors. When maturity does not allow sexing the fish, this is done by DNA analysis (protocol) on 100 individuals per stage (parr, smolts and adults). The effectiveness of the method is tested annually by including individuals of known sex in the analyses.

Sampling scheme: Recreative fisheries: Mandatory reports

The measurements made by anglers can't be verified. Only a consistency check is made when the data are inserted into the database for the size and the weight. In case of inconsistency, the information is entered into the database. Scales validate the species determined by anglers, which is made by recognized experts in scalimetry, usually two. Sex of all the salmon is analysed using DNA.

For all the schemes, the ageing of the salmon is carried out from the scales. Competence checks are regularly carried out during intercalibration seminars (3 or 4 times a year) within the framework of Colisa Biological Resources Center (https://doi.org/10.15454/D3ODJM).

**Prévost E., Baglinière J.-L., 1995. Présentation et premiers éléments de mise au point d'une méthode simple d'évaluation du recrutement en juvéniles de saumon atlantique (Salmo salar) de l'année en eau courante, p. 39-48. In Gascuel D., Durand J.L., Fonteneau A., (Eds.) Les recherches françaises en évaluation quantitative et modélisation des ressources et des systèmes halieutiques. Colloques et séminaires, ORSTOM éditions, Paris.*

2. Sampling design

For sampling scheme "salmo salar* electrofishing" and "salmo salar * trap", protocols are available at the following hyperlink : https://www6.inrae.fr/diapfc/Dispositifs/Observatoires-in-natura
For Bresle salmon electrofishing sampling scheme, the sampling design is still under discussion. Currently the method is calibrated on 8 stations per year but the project is for 9 stations sampled over 3 years.

For sampling schemes "Mandatory reports salmo salar" (recreational and professional fisheries), all fishermen whether amateur or professional, operating on the public river domain, must declare their catches. fishermen transmit their declarations throughout the authorised fishing period (depending on the fishing area). see following hyperlink:

https://partage-fichiers.extranet.inra.fr/Portal/Account/AnonymousAccessForFile?sharedspobjectid=ae96e168-8267-4117-bd84-39f48fc2b68a

3. Sampling implementation

For sampling scheme "salmo salar* electrofishing" and "salmo salar * trap", a specific application was developed to record information on capture campaigns and to guide users on the operations to be performed. The sampling of the individuals on which samples must be taken is displayed in real time depending on the stage of the fish (parr, smolt or adults), the place of capture ...

For sampling scheme “recreative fisheries: Mandatory reports” anglers have been required to report the catch of a salmon to the National Centre for Interpretation of Migratory Salmonid Catches (CNICS) (Order of October 16, 1996 in force, NOR: ENVE9650377A). This obligation concerns both recreational and professional fishermen in freshwaters. In 2019, a specific application for online reporting of salmon catches was tested on rivers in southwest France

4. Data capture

In order to prevent others errors, automatic consistency checks were made based on previous results during the sampling session. A warning message is displayed if the measured value is not within [1-99%] interval of the observed previous years values (length, weight, length/weight relation).
All our scales are checked annually and the length measurement tool is calibrated at the beginning of a trap or electrofishing session.

5. Data Storage

Data sets are in national PostgreSQL databases and are thus subject to an integrity check by the database management system. These national databases are not in open access but data can be uploaded on request. Electrofishing data are also stored in the GBIF database in open access.

6. Data processing

Data processing is made with the Scorff, Nivelle and Oir data sets by the observatory for environmental research on diadromous fish in coastal rivers (ORE DiaPFC) for salmo salar* electrofishing. The data processing with the Bresle data is under discussion.

There is no current validation by WGNAS, but discussions are in progress.

TEXT BOX 5A: QUALITY ASSURANCE FRAMEWORK FOR BIOLOGICAL DATA

Region: North Sea and Eastern Arctic North Atlantic Mediterranean Sea and Black Sea

Recreative fisheries

1. **Evidence of data quality assurance**

Recreative fisheries : Phone surveys, fishermen panels
See pilot study 1.

Recreative fisheries : Mandatory reports, bluefin tuna
The regulation that was in force in 2018 can be found here: https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000036750961&categorieLien=id, and the form that fishermen have to fill in is available here:
https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000036750961&categorieLien=id

2. **Sampling design**

Recreative fisheries : Phone surveys, fishermen panels
Sampling design and procedures are not documented..

Recreative fisheries : Mandatory reports, bluefin tuna
There is no sampling design. Fishermen have to declare all catches.

3. **Sampling implementation**

Recreative fisheries : Phone surveys, fishermen panels
Non responses are not reported..

4. **Data capture**

Recreative fisheries : Phone surveys, fishermen panels
Quality checks are not documented.

Recreative fisheries : Mandatory reports, bluefin tuna
There are no quality checks.

5. **Data Storage**

Recreative fisheries : Phone surveys, fishermen panels
A national data base is not setted up yet.

Recreative fisheries : Mandatory reports, bluefin tuna
Data is stored by the DPMA.

6. **Data processing**

Recreative fisheries : Phone surveys, fishermen panels
Data processing is not documented.

Recreative fisheries : Mandatory reports, bluefin tuna
There is no data processing.

TEXT BOX 5B: QUALITY ASSURANCE FRAMEWORK FOR SOCIOECONOMIC DATA

Fishing fleet

1. Evidence of data quality assurance

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

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

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

2. Section P3 Impartiality and objectiveness

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

3. Section P4 Confidentiality

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

4. Section P5 Sound methodology

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

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

5. Section P6 Appropriate statistical procedures

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

Revisions are currently being documented.

6. Section P7 Non-excessive burden on respondents

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

7. Section P8 Cost effectiveness

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

8. Section P9 Relevance

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

9. Section P10 Accuracy and reliability

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

Documentation concerning errors measured and documented will be written

10. Section P11 Timeliness and punctuality

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

11. Section P12 coherence and comparability

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

12. Section P13 Accessibility and Clarity

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

SECTION 5: DATA QUALITY

TEXT BOX 5B: QUALITY ASSURANCE FRAMEWORK FOR SOCIOECONOMIC DATA

Aquaculture

1. Evidence of data quality assurance

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

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

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

2. Section P3 Impartiality and objectiveness

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

3. Section P4 Confidentiality

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

4. Section P5 Sound methodology

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

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

5. Section P6 Appropriate statistical procedures

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

6. Section P7 Non-excessive burden on respondents

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

7. Section P8 Cost effectiveness

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

8. Section P9 Relevance

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

9. Section P10 Accuracy and reliability

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

Documentation concerning errors measured and documented will be written

10. Section P11 Timeliness and punctuality

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

11. Section P12 coherence and comparability

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

12. Section P13 Accessibility and Clarity

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

technical reports available on demand

SECTION 5: DATA QUALITY

TEXT BOX 5B: QUALITY ASSURANCE FRAMEWORK FOR SOCIOECONOMIC DATA

Processing industry

1. Evidence of data quality assurance

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

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

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

Main constraint is focused on estimation of missing data. As planned in the national programme, the estimation of missing data was optimized by stratifying the reference population to apply the best suited estimates to lacking enterprises, taking into account the disparity of economic performances within the sector.

Stratification was based on the technology and the range of processed products of the enterprises, but also socioeconomic performances of the enterprises: the 217 companies were dispatched in 19 groups as shown in table 2. The figures for missing companies were obtained by applying them the average of the stratum.

2. Section P3 Impartiality and objectiveness

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

3. Section P4 Confidentiality

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

Confidentiality procedures are insufficiently documented for data collection on processing industry. Since collecting data on processing industry is not compulsory, data collection will be discontinued from 2020 onwards.

4. Section P5 Sound methodology

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

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

Methodology is insufficiently documented for data collection on processing industry. Since collecting data on processing industry is not compulsory, data collection will be discontinued from 2020 onwards.

5. Section P6 Appropriate statistical procedures

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

Revisions are insufficiently documented for data collection on processing industry. Since collecting data on processing industry is not compulsory, data collection will be discontinued from 2020 onwards.

6. Section P7 Non-excessive burden on respondents

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

7. Section P8 Cost effectiveness

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

No automatic techniques for data capture, data coding and validation exist. Since collecting data on processing industry is not compulsory, data collection will be discontinued from 2020 onwards.

8. Section P9 Relevance

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

For data collection on processing industry, end users are not listed. Since collecting data on processing industry is not compulsory, data collection will be discontinued from 2020 onwards.

9. Section P10 Accuracy and reliability

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

Information collected through questionnaires are cross-checked with others data sources (for example from financial accounts and INSEE national base) and with key informants like association of processing companies or fish merchants' association ("Association Des Entreprises de Produits Alimentaires Elaborés", "Union du Mareyage Français").

But this cross-checking is insufficiently documented. Since collecting data on processing industry is not compulsory, data collection will be discontinued from 2020 onwards.

10. Section P11 Timeliness and punctuality

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

Procedures are correctly in place to ensure technical report in March and to collect data completed 2 years before the current year. Data collection will be discontinued from 2020 onwards.

11. Section P12 coherence and comparability

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

Procedures to monitor internal coherence are insufficiently documented to check internal coherence.

12. Section P13 Accessibility and Clarity

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

Technical reports are available on demand.