

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

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

**Commission Regulation (EC) No 665/2008 of 14 July 2008**

laying down detailed rules for the application of Council Regulation (EC) No 199/2008

**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

**FRANCE - Work Plan for data collection in  
the fisheries and aquaculture sectors**

**2018-2019**

Version 4 – December 2017

# CONTENTS

SECTION 0 : NATIONAL COORDINATION AND PARTNER INSTITUTIONS	3
National coordination	3
Partner institutions	3
SECTION 1: BIOLOGICAL DATA	6
Text Box 1E: Anadromous and catadromous species data collection in fresh water	6
SECTION 1: BIOLOGICAL DATA	8
Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem	8
SECTION 1: BIOLOGICAL DATA	9
Text Box 1G: List of research surveys at sea	9
SECTION 2: FISHING ACTIVITY DATA	22
Text Box 2A: Fishing activity variables data collection strategy	22
SECTION 3: ECONOMIC AND SOCIAL DATA	27
Pilot Study 3: Utilisation des liasses fiscales pour compléter les données économiques	27
Text Box 3A: Population segments for collection of economic and social data for fisheries	27
SECTION 3: ECONOMIC AND SOCIAL DATA	30
Text Box 3B: Population segments for collection of economic and social data for aquaculture	30
SECTION 3: ECONOMIC AND SOCIAL DATA	35
Pilot Study 4: Environmental data on aquaculture	35
SECTION 3: ECONOMIC AND SOCIAL DATA	36
Text Box 3C: Population segments for collection of economic and social data for the processing industry	36
SECTION 4: SAMPLING STRATEGY FOR BIOLOGICAL DATA FROM COMMERCIAL FISHERIES	37
Text Box 4A: Sampling plan description for biological data	37
Purse seiners	38

## **National coordination**

### **Mission des affaires scientifiques (MAS)**

*Scientific affairs unit, Directorate for Sea Fisheries and Aquaculture*

Direction des pêches maritimes et de l'aquaculture

Tour Séquoia / 92055 LA DÉFENSE Cedex

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## **Partner institutions**

### **1. Mission des affaires scientifiques (MAS)**

*Scientific affairs unit, Directorate for Sea Fisheries and Aquaculture*

Direction des pêches maritimes et de l'aquaculture

Ministère de l'Agriculture et de l'Alimentation Grande Arche Paroi Sud / 92055 LA DÉFENSE Cedex

The Directorate for Sea fisheries and Aquaculture operates as a contractor for the collection of biological, ecosystem and activity data.

### **2. (until December the 31st 2017) Service de la donnée et des études statistiques (SDeS)**

Commissariat général au Développement durable

Ministère de la Transition Ecologique et Solidaire), Tour Séquoia / 92055 LA DÉFENSE Cedex

### **(from January the 1st 2018 onwards) Service de la Statistique et de la Prospective**

Ministère de l'Agriculture et de l'Alimentation

<http://agreste.agriculture.gouv.fr/>

The SDeS contributes to the processing of economic and social data for fisheries and aquaculture.

### **3. Institut français de recherche pour l'exploitation de la mer (IFREMER)**

*Station Ifremer de Nantes, Rue de l'Île d'Yeu, BP 21105, 44311 Nantes Cedex 5*

IFREMER is a contributor in the four regions in which France conducts fisheries activities, *i.e.* the North Sea and Eastern Arctic, North Atlantic, Mediterranean and 'Other Regions'. IFREMER contributes to the collection of economic data, biological data, activity data, research surveys at sea and ecosystem data.

### **4. Institut de recherche pour le développement (IRD)**

*French National Research Institute for Sustainable Development*

UMR 248 MARBEC – Marine Biodiversity, Exploitation and Conservation

*Centre de Recherche Halieutique Méditerranéenne et Tropicale*

Avenue Jean Monnet - BP 171, 34 203 Sète Cedex FRANCE  
, [www.umr-eme.org](http://www.umr-eme.org), [www.ot.ird.fr](http://www.ot.ird.fr)

IRD contributes to the French National data collection in the tropical Indian and central-east Atlantic regions with regards to tropical tuna fisheries (purse seine, bait boat and pelagic longline). IRD contributes by gathering data for the collection of tuna catch and length frequency data (sampling at landings and transshipments for both purse seine and bait boat fisheries), discards data (at-sea observers for purse seine and pelagic longliners and self-reporting for pelagic longliners) and biological data (sampling at processing factories). The "Observatoire Thonier" in charge of this contribution to DCF has been ISO 9001 certified since January the 12<sup>th</sup> of 2009.

#### **5. Institut d'Économie et de Management de Nantes (LEMNA)**

*Nantes Institute for Economics and Management*

Chemin de la Censive du tertre, BP 52231, 44322 Nantes Cedex 3

LEMNA contributes through the collection of economic and social data for fisheries and for aquaculture.

#### **6. FranceAgriMer**

Marchés Études et Prospective

FranceAgriMer, TSA 20002, 12, Rue Rol Tanguy, 93555 Montreuil Sous Bois.

FranceAgriMer contributes to the collection of data on the processing industries and to the collection of data related to recreative fisheries at sea.

#### **7. Agence Française pour la Biodiversité (AFB)**

*French agency for biodiversity*

"Le Nadar" Hall C,

5, Square Félix Nadar

94300 Vincennes.

AFB contributes through the collection of data on inland waters, and operates data collection for Mayotte's marine fisheries through its Natural Marine Park in Mayotte."

ONEMA contributes through the collection of data on inland waters.

#### **8. Muséum National d'Histoire Naturelle (MNHN)**

*National museum for Natural History*

57, rue Cuvier, CP 26, 75 231 Paris Cedex 05

The MNHN contributes to the collection of biological data for elasmobranchs.

#### **9. Office de l'environnement de la Corse (OEC)**

Agency for Corsica environment

14 Avenue Jean Nicoli - 20250 Corte

OEC contributes to data collection in Corsica

**10. Institut national de recherche agronomique (INRA)**

National institute for agronomical research

INRA - U3E - Unité Expérimentale d'Ecologie et d'Ecotoxicologie aquatique

65, rue de St Briec, 35 042 Rennes Cedex, France

INRA contributes to data collection for salmon in inland waters.

**Text Box 1E: Anadromous and catadromous species data collection in fresh water**

*General comment: This Box fulfills paragraph 2 points (b) and (c) of Chapter III of the multi-annual Union programme and Article 2 of this Decision.*

Method selected for collecting data.

**EEL**

In accordance with regulation R (EC) No 1100/2007 of 18 septembre 2007 and in accordance with eel management plan in France rivers index 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 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 km<sup>2</sup>;
4. River Basin > 1000 km<sup>2</sup> plain;
5. River Basin > 1000 km<sup>2</sup> 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.

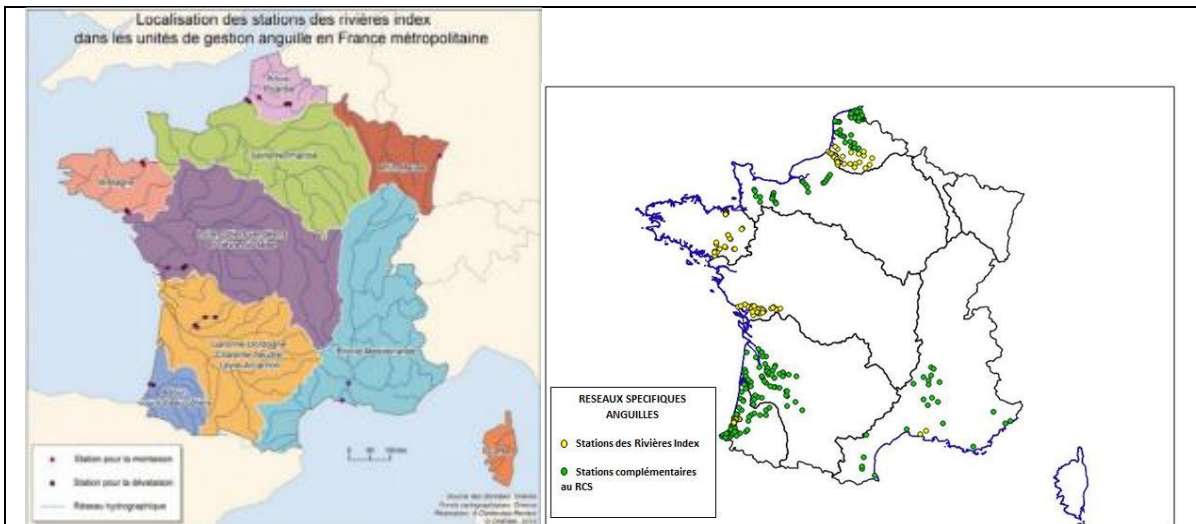


Figure left: location of monitored sites of recruitment and downstream migration; Figure right: location of electrofishing stations - yellow eels

### 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.



## SECTION 1: BIOLOGICAL DATA

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

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

**SUPRA REGION : OTHERS REGIONS**

**REGION : 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, exhausted, well alive) and handling pratices will be monitored.

Expected outcomes of this pilot study are :

- \* to identify how condition and handling pratices 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.

## SECTION 1: BIOLOGICAL DATA

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

*General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.*

For 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. Two are long-term series already proposed by France in its WP for DCF funding under EMFF but not listed in the above mentioned table 10.

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 from one year to the next. The technical details are therefore valid for the three years 2017, 2018 and 2019.

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

##### 1. Objectives of the survey

The surveys conducted by France 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)

When assessing certain fish stocks, the Eastern English Channel is included with the North Sea, due to substantial 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.

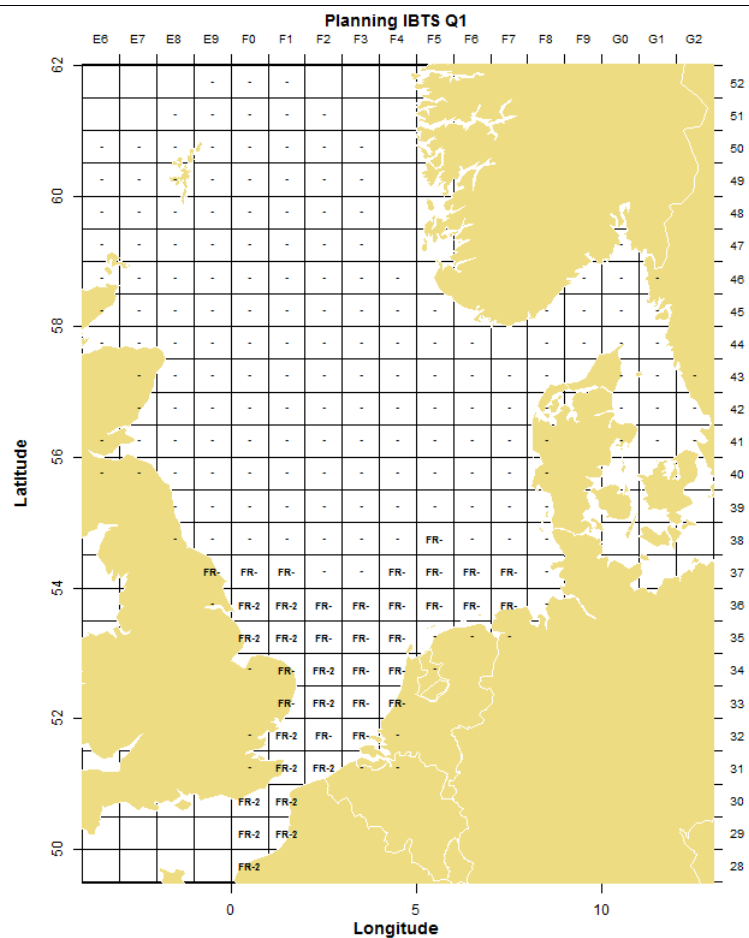
The main species considered are whiting, cod, haddock, Norway pout, herring, sprat, mackerel and plaice, for which analyses include age-reading and maturity staging. During its 2016 meeting, the IBTS working group defined a new allocation of the sampling areas between countries in order to reduce vessel time. As a result, 55 hauls were allocated to France which samples the Southern North Sea and the Eastern English Channel over a period of 21 days (table 1G). The hauls are being carried out by the research vessel “Thalassa” according to the rigorous IBTS protocols defined at international level under the coordination of the ICES WGIBTS (, annual WGIBTS reports). 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 litter items, as well as bird and mammal observations were initiated in 2008 (table 1H), 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 validated by being reread and checked 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, see website ). 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.

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



Map 1.G.1 : 2017 IBTS French survey – Number of trawl stations by square.  
In squares with one haul, two MIK stations will be carried out and four in squares with two hauls.

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

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 for the area “South of 62°N” (trawl data and larvae net station data) (HAWG), 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 uses with these data.

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

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

5. Explain where thresholds apply

Not relevant

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

1. Objectives of the survey

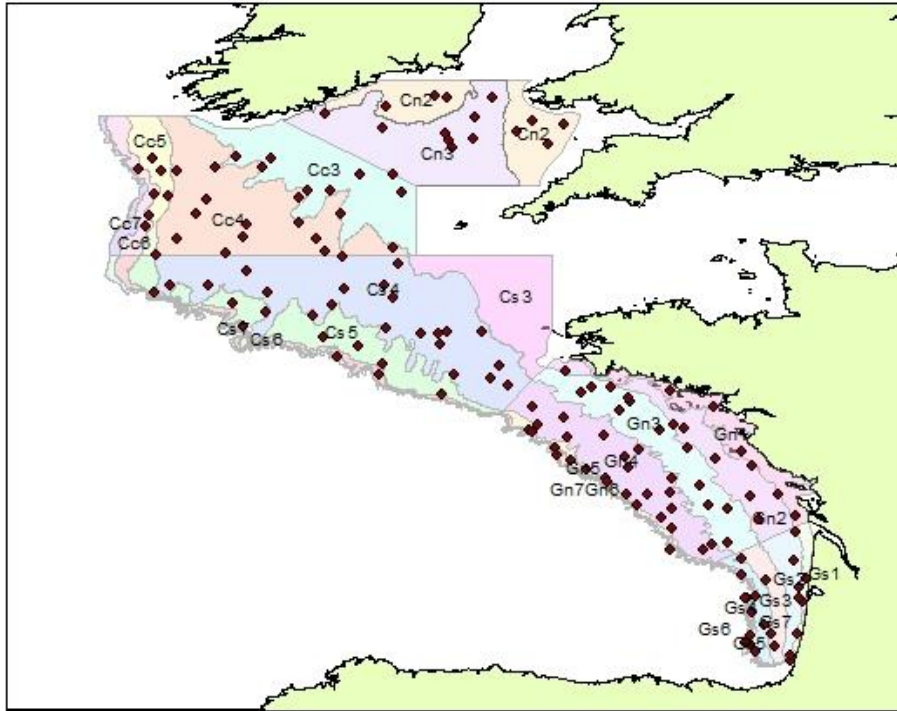
The EVHOE survey (EVALuation des ressources Halieutiques de l'Ouest Européen - Assessment of Fisheries Resources in Western Approaches) contributes to the Western IBTS 4th quarter surveys. The survey covers fish and invertebrate species in the Bay of Biscay and Central Celtic Sea and provides abundance 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 otoliths 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).

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 (see EVHOE manual at the following address ).



Map 1.G.2 : Map showing sampling strata and 2016 hauls positions for W-IBTS-Q4 – EVHOE survey.

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

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

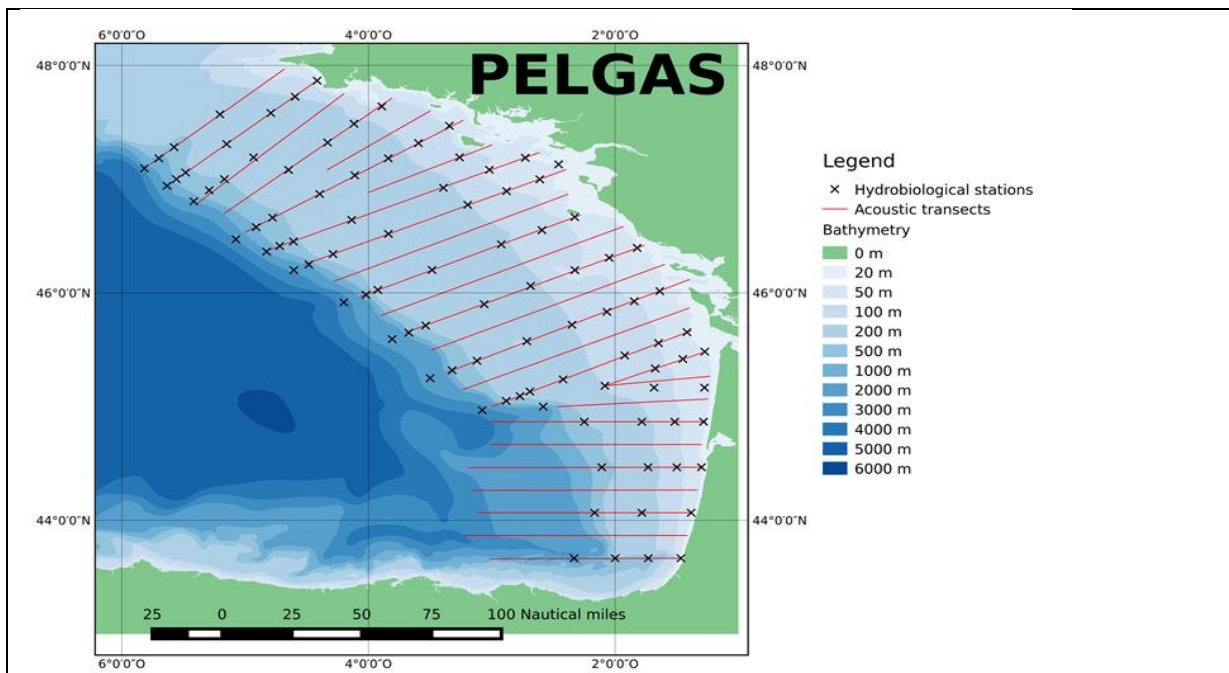
1. Objectives of the survey

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 working group. Methods have been validated by WGACEGG and are described in details in the .

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.



Map 1.G.3: 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 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

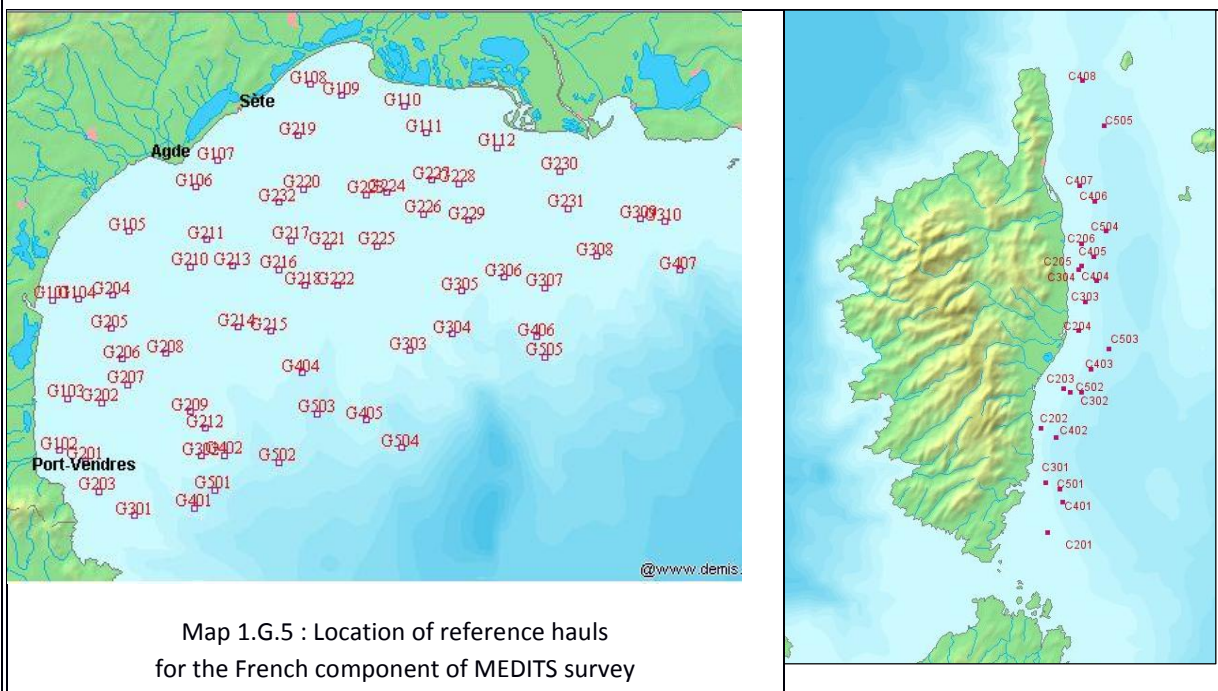
**4. Mediterranean international bottom trawl survey MEDITS – MEDITS-FR (French name)**

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 (see ). 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 weighed and fish samples are collected for research studies (contaminants, diet,..).



(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) at or 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

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

1. Objectives of the survey

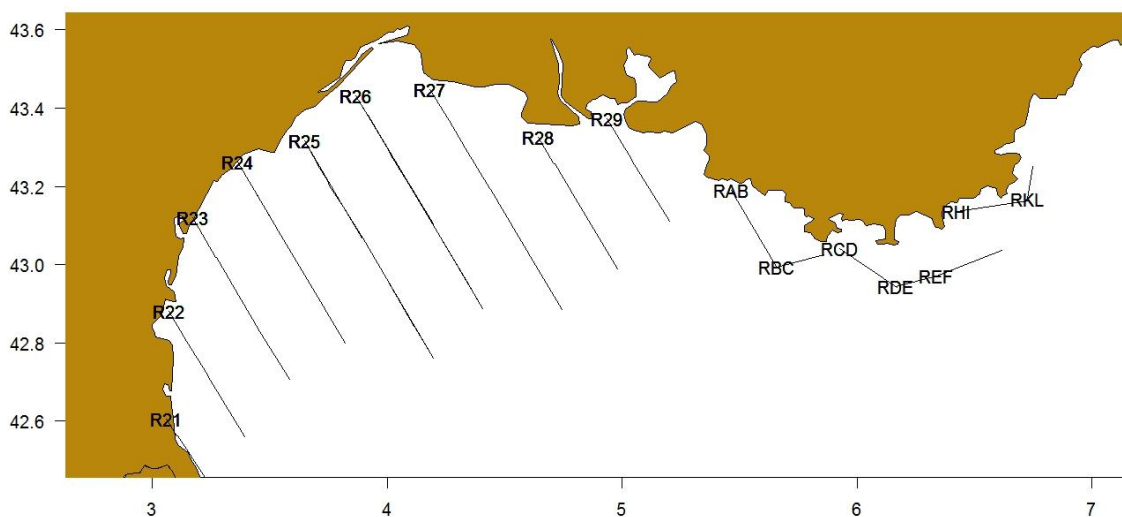
The aim of the French PELMED survey is to increase our understanding of the pelagic ecosystem in the Gulf of Lions using acoustic transects accompanied by pelagic trawl hauls to identify echo-traces detected. In particular it allows us to estimate biomass indices of the main small pelagic species in 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 Lions, 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 has been stopped as Spain now covers the area using the MEDIAS protocole. Instead since 2016 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.



Map 1.G.6 : Acoustic French part of MEDIAS survey for the continental shelf between Barcelona and Marseille, as planned by the MEDIAS Group.

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 with 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

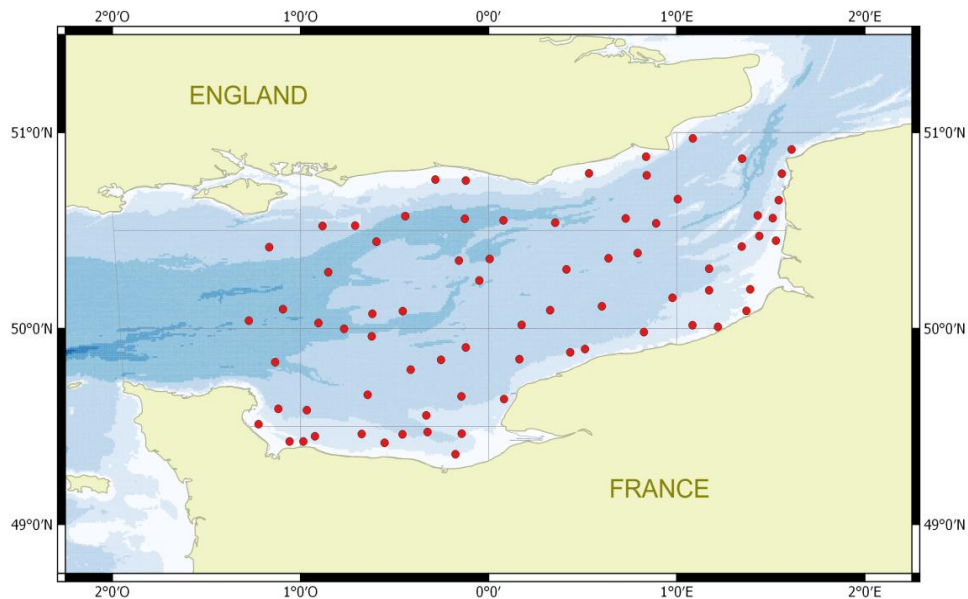
**6. Western IBTS fourth quarter W-IBTS-Q4 – CGFS (French name)**

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 () 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.



Map 1.G.7: Bottom-trawl sampling stations of W-IBTS-Q4-CGFS survey in the eastern English Channel.

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 formatted 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

**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

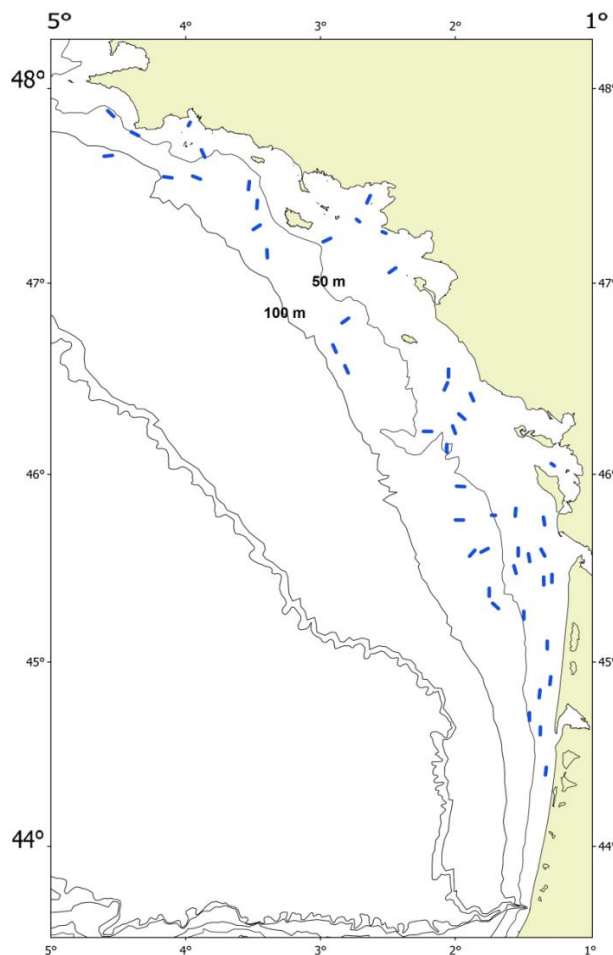
benthos is exhaustively sampled for all the hauls (for determination at the laboratory).

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.



Map 1.G.8 : 2015 hauls positions of ORHAGO survey in the Bay of Biscay.

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 state 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

## SECTION 2: FISHING ACTIVITY DATA

### Text Box 2A: Fishing activity variables data collection strategy

*General comment: This Box fulfills paragraph 4 of Chapter III of the multi-annual Union programme and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of this Decision. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under Regulation (EU) No 1224/2009 or where data collected under Regulation (EU) No 1224/2009 are not at the right aggregation level for the intended scientific use.*

#### **SUPRA REGION : OTHERS REGIONS**

#### **REGION : IOTC**

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

###### Selection of metiers to be samples

IRD is responsible of the whole collection of activity variables for the French tropical purse seine fishery (effort, landings and observer data). In the Indian Ocean, the IRD has one permanent member of technical staff 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 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 is 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 15-18 wells, storing a maximum of about 1,300 t. The whole vessel (i.e. all wells combined) have not been used as sampling unit 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.

##### 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 10% 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.

**SUPRA REGION : OTHERS REGIONS**

**REGION : ICCAT**

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

Selection of métiers to be sampled

IRD is responsible of 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 permanent member of technical staff in post 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 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 seiners : For this métier the target population and sampling units are similar to those for the Indian Ocean (region IOTC).

Pole and lines : For this métier, the target population is all the fishing trips of the entire French bait boats landing in Dakar. 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 10% 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.

**FOR ALL OTHERS REGIONS**

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 definition of all the fishing trips of the French fleet with their associated features is based on a cross-validation tool - SACROIS - of the different declarative sources aiming to provide the best possible fishing statistics data.

SACROIS<sup>2</sup> is a validation tool for the fishery 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 (for vessels less than 10m without logbooks, declarative forms adapted to the special features of the small-scale coastal fisheries), sales notes data, VMS data and the scientific census of fishing activity calendars (Activity survey), 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 also provides several quality indicators and evaluates completeness of the data flows.

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

The allocation of métiers to a fishing trip is included as well into the SACROIS tool and is based on the dominant landed specie (or group of species) in value, the activity calendar survey of the vessel considered and eventually the gear registered. The methodology to determine the dominant landed specie (or group of species) is based on the raw ordination of the landed species.

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<sup>2</sup> Demanèche et al. 07/2013 : Projet SACROIS "IFREMER/DPMA" V3.2.5 (<http://sih.ifremer.fr/Description-des-donnees/Les-donnees-estimees/SACROIS>)

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.

**Activity surveys** are conducted yearly by Ifremer on the basis of preliminary documentation provided by available data (Fleet register, Logbooks, Monthly declarative forms, Sales note data, On-site samplings)<sup>3</sup>. They cover the whole of the reference population and provide monthly activity schedules indicating the main fishing grounds and metier operated by the vessels. It is to be noticed that this procedure has the benefit to provide the metiers as given by the fisherman himself throughout the year and on an exhaustive basis and provide information on the part of no fishing activity which is not included in available declarations.

This survey will be conducted in the North Sea, Channel & Atlantic area, the Mediterranean area (including Corsica) and overseas.

Such surveys provide 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 DCMAP technical decision . They are particularly useful for checking the completeness of declarative data (logbooks, monthly declarative forms and sales notes) and if necessary for re-evaluating them. 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.

**On-site sampling of trips (catch assessment survey)**<sup>4</sup>. These sampling surveys are used to estimate fishing effort and landings of the vessels for which the coverage and precision of their available declarative data are insufficient. 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.

This will be conducted for vessels under 12m in the Mediterranean continental area (GSA 07), Reunion, Martinique and French Guiana zones. However, the quality and completeness of the available declarative data will be analysed regularly during the scope of the present national program and alternative methodology could be applied, during the period in which the present national program will be applied, if they are judged sufficient and reliable to estimate the transversal variables. In this case, they could be

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<sup>3</sup> 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 DEMANECHÉ, Fabienne DAURES, Claude MERRIEN, Patrick LESPAGNOL - HH.

<sup>4</sup> « Methodological issues to estimate catches and fishing effort of small-scale fisheries by sampling fishing trips on-site », Demaneche S. and al., 7th International Fisheries Observer & Monitoring Conference, 8-12 April 2013, Vina Del Mar (Chile). w panelists4.html)

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-length, ... to be able to estimate them when insufficient sub sample of fishing forms data are available. 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.

## SECTION 3: ECONOMIC AND SOCIAL DATA

### Pilot Study 3: Utilisation des liasses fiscales pour compléter les données économiques

*General comment:*

1. Aim of pilot study

Il s'agit d'utiliser les données provenant de la fiscalité des entreprises de pêche, disponibles dans le système statistique public de la France. L'objectif est d'une part d'obtenir des données sur les revenus, les charges, les investissements dans les segments de flotte des régions d'outre-mer non enquêtés jusque là, d'autre part de traiter les non-réponses pour les segments de flotte actuellement enquêtés.

2. Duration of pilot study

L'étude sera menée en 2017.

3. Methodology and expected outcomes of pilot study

To be established.

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

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

#### **SUPRA REGIONS BALTIC SEA, NORTH SEA AND EASTERN ARCTIC, AND NORTH ATLANTIC & MEDITERRANEAN SEA AND BLACK SEA**

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 SOeS, which is the Ministry of Environment, Energy and the Sea's statistical service. The procedure relies on two partners who carry out different methodologies:

- The Laboratoire d'Economie et de Management de l'Université de Nantes (LEMNA) collects economic

data for ships 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 which keeps accounts on behalf of the ship-owners (PriceWaterhouseCoopers).

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 techniques, target species, fishing ground) 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 to 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.

New variables (social variables and total number of hours at sea) can only be estimated if a precise definition is given.

#### 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 Reunion island, and Purse seiners more than 40 meters targeting tuna, by using the same collecting methodology as the other fleet segments. Le LEMNA utilisera la même méthode que pour les autres supra-régions à savoir la source compatible et cherchera à étendre sa collecte aux 10-12m à la Réunion et aux 18-24m en Guyane Française.
- IFREMER : vessels less than 10 meters in the French West Indies (Guadeloupe and Martinique : DFN, FPO, HOK, PGP) and vessels in French Guyana using nets (DFN) less than 12 meters

Up to now, no data have been transmitted to the European commission for fleet segments less than 12 meters in French other regions. For the first time, a new methodology will be tested in 2018 by Ifremer. 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 don't have either bookkeeping or personal forms to register these informations. Ifremer proposes to test 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;
- 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 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 shipchandlers.

Those data sources make possible the estimation of socioeconomic variables at fleet-segment level based on a statistical approach. Depending on the availability of data at vessel level, the socioeconomic indicators will be estimated at vessel level or directly at fleet-segment level. All those data sources will be collected yearly except for the socioeconomic survey that only need to be implement on the first year (2018), and then every four years. However, it might be necessary to use data from previous year if no updated data are available.

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, the PIM method will be tested in 2017.

Other income and subsidies (operating and investments) : not applicable.

The total hours worked per year is a new variable that still need clarifications in terms of definitions and methodologies.

### SECTION 3: ECONOMIC AND SOCIAL DATA

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

*General comment: This Box fulfills paragraph 6 points (a) and (b) of Chapter III of the multi-annual Union programme and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of this Decision. It is*

*intended to specify data to be collected under Tables 6 and 7 of the multi-annual Union programme.*

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

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 centres, 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 programme 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 2017, France will examine possible methods in order to collect new social (table 6) and environmental variables (table 8) as soon as the different definitions are specified. According to applied method, the financial cost of the method should be assessed.

### **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 centres. Non-accounting data will be obtained from a supplementary survey, which will be validated annually in order to provide the required indicators.

New variables such as number of hours by employees and unpaid labour should be clarified in terms of definition and of calculation method.

### **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 programme 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 centres specialised in these economic sectors. The planned sample rate is from 15 to 20%.

The small number of saltwater fish farming, their specialised characteristics, and their large size will presumably allow a higher sample rate, around 50%.

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

As regards the annual production exhaustive survey, the response rate is generally between 60 and 70%, 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:*

a) due to the lack of definition of the segmentation, France has some difficulties to assign certain enterprises to the right segments (exemple of “Tanks and Raceways”, “Recirculation systems”, Sturgeon).

b) Production data (in weight and value) are assessed via an exhaustive survey realised by the statistical service of French fisheries organisation. This survey is registered to the national committee for statistical information and must follow rules for statistical confidentiality: published results aggregated from a minimum of 3 enterprises and one unit doesn’t represent more than 85% of the group total. In accordance with these rules, no data will be collected for some segments: “salmon / other marine fish - cages”, “seabass & sea bream / other marine fish - Tanks”, “Trout / Crustaceans / Other molluscs - Hatcheries”,

c) Concerning some segments as oyster Hatcheries or algae (micro or macro algae), France misses informations about the enterprises which be assigned in these segments and will check the feasibility of the collect.

**Pilot Study 4: Environmental data on aquaculture**

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

1. Aim of pilot study

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 the French ministry for agriculture and food cares will be implemented in order to evaluate the feasibility of collecting environmental data on aquaculture. In particular, this collect would be facilitated by the creation of a national coordinator of the health strategy in shellfish sector in 2016.

2. Duration of pilot study

To be established

3. Methodology and expected outcomes of pilot study

To be established

## SECTION 3: ECONOMIC AND SOCIAL DATA

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

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

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

Through the checking of companies registered under NAF 10.20Z and professional press, available financial accounts are analyzed. The other sources are questionnaires.

#### 2. 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.

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

A cross-checking of the DCF database with professional press makes it possible to list new companies that should be added to the sampling.

#### 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, taking into account the disparity of economic performances within the sector. Stratification is based on 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.

#### 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.

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

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

**REGION : NORTH SEA AND EASTERN ARCTIC, NORTH ATLANTIC AND MEDITERRANEAN**

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 for stocks is detailed in the section 1.
2. The fisheries dependent data are collected through several sources:
  - a. The at-sea sampling plan (called “ObsMer”<sup>5</sup>): 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 (called “ObsVentes”<sup>6</sup>): 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<sup>7</sup> (annex 12).

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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 transcribed 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).

#### **SUPRA REGION : Others Regions**

#### **REGION : 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 informations 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 case, 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 is 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 uses 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 tons landed as required by IOTC.

**SUPRA REGION : OTHERS REGIONS**

**REGION : 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 the 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 at the scale of the UE purse seine in the Atlantic Ocean.

The sampling procedures described in the IOTC section are applied for the Atlantic Ocean.

**For bycatch and discards** the sampling procedures described for the IOTC region are applied for Atlantic ocean.

#### **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.